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ABSTRACT

The programs of Planned Variation in Head Start and Follow Through are described in regard to their history, the models of early childhood education included in each, and the results found in the first major evaluations of the programs. Results from the studies are tentative but appear to provide milestones in understanding the relationships between school experiences and children's growth. Among the major findings are the following: (1) Participants made greater gains in achievement and cognitive development during the school year than did non-participant children; (2) Examining academic achievement and cognitive and attitudinal growth suggested an equality of effects of well-implemented educational programs; (3) Difference among Planned Variation approaches suggested a specificity of effects such that programs with specific objectives and strategies to achieve them were more effective in achieving the objectives than were other programs; and (4) Approaches differed in actual practice in accordance with their published descriptions. Future evaluations of the two programs will describe effects of different educational approaches after children have participated in them continuously for several years. (LH)

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PLANNED VARIATION IN

HEAD START AND FOLLOW THROUGH

BY

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PLANNED VARIATION IN HEAD START AND FOLLOW THROUGH¹

Beginning in the mid-1960s, the Federal Government undertook a number of systematic experiments to explore the efficacy of various alternative approaches for delivering educational and social services. Two of the largest Federal efforts in systematic experimentation were the programs of Planned Variation in Head Start and Follow Through.² This chapter describes the history of each program, the models of early childhood education included in each, and the results found in the first major evaluations of the programs.

PROJECT HEAD START

A brief history of Project Head Start will serve to place the Planned Variation experiment in perspective. During the early 1960s an increasing number of psychologists and educators began to study the effects of early experiences on human development. A good deal of their research suggested that preschool compensatory education might be an important step for disrupting the cycle of poverty experienced by large numbers of Americans. Combined with powerful social and political factors, this notion led to the authorization of Project Head Start in 1965. Among its comprehensive objectives were the following:

¹Many individuals in the Office of Child Development, the Office of Education, local communities and the Stanford Research Institute are responsible for the successful operation of the Planned Variation Studies. The author, who was involved with these studies as a member of the staff of the Department of Health, Education and Welfare, wishes to acknowledge all those dedicated individuals whose extensive efforts were the basis for this chapter.

²Both Head Start and Follow Through are comprehensive programs, including the following components: health, nutrition, education, psychological and social services, and parent involvement. The Planned Variation studies focus most directly on the educational and parental involvement components of the programs.

- . improving the child's health and physical abilities
- . fostering the emotional and social development of the child by encouraging self-confidence, spontaneity, curiosity and self-discipline
- . promoting the child's mental processes and skills with particular attention to conceptual and verbal skills
- . establishing patterns and expectations of success for the child in order to create a climate of confidence for his future learning efforts
- . increasing the child's capacity to relate positively to family members and others while at the same time strengthening the family's ability to relate positively to the child
- . developing in the child and his family a responsible attitude toward society and fostering constructive opportunities for society to work together with the poor in solving their problems
- . increasing the sense of dignity and self-worth within the child and his family.

Although these objectives have continued to guide Head Start, the program has evolved considerably since its inception. Most early Head Start centers were varied, hastily assembled adaptations of the adjustment-centered nursery schools long attended by middle-class children. Curricula for providing enriched experiences to children of the poor simply were not available in 1965. A few were being developed, but they were in preliminary form. Since that time, there has been a proliferation of preschool models for disadvantaged children based on different educational theories and methods.

Impact of Head Start

Information about the effects of Head Start has been collected since the program's beginning. Similar evaluations have been undertaken by experimental laboratory preschools, and the findings from the two groups of studies have been basically alike. Typically, studies have shown increases on general

ability and achievement tests immediately after participation in both summer and full-year preschool programs. Participant children generally have performed better than non-participants immediately after the program, with the differences statistically significant. Although most evaluations demonstrated these immediate increases, the magnitude of gains was large in only a few cases. The increases were greatest when programs were of longest duration, when program objectives were well-formulated and oriented towards the areas evaluated, and when the participating children's initial level of performance was low. In addition to reporting gains on measures of intellectual functioning, some evaluations also reported immediate positive effects on children's attitudes, motivation and social behavior as rated by teachers (Grotberg, 1969).

Follow-up evaluations, however, have indicated that the immediate advantages to participant children generally diminish by the end of the first or second year in public school. What seems to happen is that the increases in rate of development promoted during the preschool year on measures of ability and achievement are not sustained during the early elementary grades. Rather, the rate of growth during these years is somewhat less for participant than for nonparticipant children. The result is that usually by the end of first grade, although in a few cases not until the second or third grade (Beller, 1969; Engelmann, 1970; Weikart, 1970), poor children who have had preschool experiences perform approximately on a par with their peers who have not, and both groups perform below national norms.

The usual explanation for the "leveling off" in rate of development by participant children is that public schools are unable to support the

increment which Head Start and laboratory schools produce. As Datta (1969a) explained:

It may be naive to expect a child to continue to progress rapidly in a classroom where the teacher may be responsible for 30 or more children, may be primarily concerned with maintaining order and perhaps convinced that most of her students have little potential (p. 14).

If this interpretation is correct, continuation of compensatory education into the primary grades might sustain preschool gains. Findings from a few scattered studies with several dozen children are consistent with this notion (Beller, 1969; Erickson et al., 1969; Karnes et al., 1969).

Basically, the findings after several years of preschool compensatory education are inconclusive. Scientific concepts suggest that preschool programs can provide disadvantaged children with a set of experiences at an important time in their lives that will help diminish the effects of poverty. Supportive evidence has come from a few Head Start programs and laboratory preschools which produced relatively large improvements in learning ability. But the majority of Head Start and other compensatory preschool programs, although producing measurable immediate gains, have not produced lasting increases in children's intellectual development.

The current situation regarding knowledge of preschool programs' effects is a difficult one. On the one hand, little information exists about the total range of programs' effects or the processes which underlie these effects. On the other, the Federal Government's interest in developmental day care for preschool children is expanding, as is the interest of state and local governments and industries; in addition, a larger proportion of Title I ESEA funds are being allocated³ to preschool programs than heretofore.

HEAD START PLANNED VARIATION

The Head Start Planned Variation Study was undertaken in 1969 to provide extensive information about compensatory education by exploring several well-formulated approaches to preschool education in a variety of settings. In conjunction with Follow Through it explores such issues as:

- . The effects of various well-defined educational strategies on Head Start children and their families
- . The nature of experiences provided by different programs
- . The mechanisms of curriculum implementation
- . The contribution of intervention in preschool in contrast to intervention in the primary grades
- . The benefits of continuous, sequenced intervention following the same educational strategy over several years.

³The reference is to Title I of the Elementary and Secondary Education Act of 1965.

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The purpose of examining these issues is not to identify one or two "best" approaches to compensatory education. Rather, the goal of the Planned Variation studies is to provide local communities with information about a range of educational alternatives, both in terms of specific program elements which can be combined in an eclectic fashion and in terms of total "program packages."⁴

Head Start Planned Variation Models

In order to be included in the Head Start Planned Variation study, an early education model had to meet the following criteria:

- . It must have been tested in a laboratory school, representing a well-formulated strategy for preschool education
- . The sponsor of the model must have been implementing a program for elementary school children based on the model's principles as part of the Follow Through program.⁵

On the basis of these criteria, eight preschool models were selected to participate in the first year of the Head Start Planned Variation study. During that year, each model was implemented in two communities where the sponsor had already been operating Follow Through classes. It is the results of that first year study that are summarized in this chapter.⁶ Brief

⁴ It is important to note that both the Office of Child Development and the Office of Education wish to promote good educational practices, in general. Neither prescribes that curriculum "models" be adopted by local communities. The Planned Variation studies are intended only to provide information about a variety of educational approaches.

⁵ A program sponsor refers to an individual, a group, a university, or a private corporation that directs a specific model.

⁶ In the two remaining years of the Head Start Planned Variation study, the eight models were extended into additional communities and four new models were added. Data from the second and third years are not yet available.

descriptions of the eight models included in the first year of Planned Variation in Head Start are as follows:^{7,8}

A pragmatic action-oriented model, sponsored by the Education Development Center in Newton, Massachusetts, was inspired by the English Infant Schools. Its objective is to fashion classroom environments responsive to the individual needs and styles of children and teachers. It is an advisory and consultant systems which encourages school and teachers to experiment with diverse avenues for fostering children's self-respect, respect for others, imagination, curiosity, persistence, openness to change, and ability to challenge ideas.

The academically-oriented preschool model is sponsored by Wesley Becker and Siegfried Engelmann of the University of Oregon. It promotes academic learning in reading, arithmetic and language through structured drills and reinforcement techniques; small study groups of five to ten children are organized by teachers according to ability levels in order to facilitate presentation of patterned learning materials and to elicit constant verbal responses from children.

The behavior analysis model was developed and is sponsored by Don Bushell of the University of Kansas. The goal of the program is to teach children needed subject matter skills such as reading and arithmetic through systematic reinforcement procedures using a token system and through individualized programmed instruction.

The Bank Street College model, developed and sponsored by the Bank Street College of Education in New York City, represents a "whole-child" approach in which the ultimate objective is to enable each child to become deeply involved and self-directed in his learning. By functioning as consistent adults that children can trust, by being responsive to individual children's needs, and by sensitizing them to sights, sounds, feelings and ideas, Bank Street teachers help children build positive images of themselves as learners.

⁷The descriptions are taken from Klein (1970), Gordon (in press), and the author's own observations.

⁸Montessori programs were not included in Planned Variation because of problems in accommodating Montessori training requirements to the existing staffing patterns in Head Start and Follow Through. They have, however, been included in other federally funded comparative evaluations of preschool models (Di Lorenzo et al., 1969; Karnes et al., 1969; Miller and Dyer, 1970).

The Florida parent-educator model, developed and sponsored by Ira Gordon of the University of Florida, insures home instruction as well as classroom instruction by involving parent-educators. A parent-educator is a mother from the local community who works in the classroom as a teacher's aide and with parents in their homes. It is a cognitively-oriented program based on the theories of Piaget, although the curriculum is flexible and varies according to the needs of particular individuals and classes.

The Tucson early education model, originally designed by Marie Hughes, is sponsored by the University of Arizona. It emphasizes the development of language competence, intellectual skills, motivation, and social skills through providing children with freedom to choose activities, through fostering cooperation among children, and through systematic positive reinforcement from teachers.

The responsive model, designed and sponsored by Glen Nimnicht of the Far West Laboratory for Educational Research and Development, is focussed on helping children develop both a positive self-image and intellectual ability through use of a responsive environment which consists of self-pacing and self-rewarding materials. These materials emphasize problem-solving skills, sensory discrimination and language ability; they provide immediate feedback and enjoyment from learning itself.

The cognitive model, developed and sponsored by David Weikart of the High Schope Educational Research Foundation, presents a cognitively-oriented preschool program derived from the theories of Piaget; the model emphasizes the importance of home training sessions with mothers and of decision-making roles for teachers. Teachers plan detailed lessons and activities; they are given continual assistance from classroom supervisors.

For the first year analyses, models were grouped into three categories on the basis of their primary orientation towards children's learning. The three categories are Preacademic, Cognitive Discovery and Discovery approaches.

The Preacademic programs are the Engelmann-Becker academically-oriented and the Bushnell behavior analysis models. Both foster development of pre-academic skills, such as number and letter recognition, reading, writing, and instructional language; their techniques include use of systematic reinforcement.

The Cognitive Discovery programs are the Florida parent-educator model, the Tucson early education model, the responsive model, and the Weikart cognitive model. Each promotes the growth of basic cognitive processes such as categorizing, differentiating, abstracting, and inferring by providing continuous verbal accompaniment to children's sequenced exploration.

The Discovery programs are the EDC pragmatic action-oriented model and the Bank Street College model. Both foster learning as part of the humanistic growth of the "whole child" by encouraging such experiences as free exploration and self-expression. They place heavy emphasis on the child's sense of self-worth, of trust in adults and the world, and respect for others.

Head Start Planned Variation Study

The objectives of the first year Head Start Planned Variation study included: 1) documenting implementation of the eight different models; and 2) undertaking preliminary analyses of program effects.⁹ The first year evaluation was carried out by Stanford Research Institute.

Measures of Implementation:

The process of model implementation was documented in four ways. Each sought to answer the question: To what extent do the classrooms embody the teaching strategies and concepts elaborated in their respective models?

⁹The primary objective of the first year evaluation was to document implementation. In future years, the focus will shift to measurement of effects, both immediate and sustained--with assessment of children continuing through the end of the third grade. The reason for this two-stage approach was to enable models to achieve satisfactory implementation before extensive program comparisons were made.

The two methods of describing implementation were to analyze reports prepared by Office of Child Development consultants and model sponsors. These reports appraised the success with which various classrooms were implemented, the level of performance of different teachers, and the efforts of sponsor representatives to train, guide and support teachers. The third method used information collected in teacher questionnaires. The fourth method of documenting implementation analyzed the actual experiences provided for children in the different models. This information was derived through systematic observations using the Stanford Research Institute Classroom Observation instrument. The instrument addresses such questions as: How is time allocated in the classroom? What materials are used? What do the adults do? What do the children do? How are the children grouped? What control systems are used: What is the affective environment? (Stanford Research Institute, 1971a, p. 114.)

Measures of Effects on Children:

In the first year of the Head Start Planned Variation Study, assessment of effects on children included measures of cognitive functioning, achievement, response styles in coping with tasks, and personal-social development.¹⁰ For some models (the Preacademic), the measurement instruments represented a reasonably adequate set of criteria for evaluating their effects, although the full extent and variety of effects may have been underestimated. For other models (the Cognitive Discovery and Discovery), while the measures that were used tapped some of their objectives, goals in other areas (such as the fostering of

¹⁰ Personal-social development was evaluated through clinical case studies prepared by a team of psychologists at the University of Maryland under the direction of Dr. Laura Dittman. The results of these studies are described in Dittman et al., 1970.

initiative and curiosity) were not tapped, due to the unavailability of validated, standardized tests in these domains. Thus, due to the state of the art in measuring young children's development, it was not possible in the first year of the Head Start Planned Variation study to measure all the significant concerns of all the programs.¹¹

The first instrument measuring effects on children, a test of academic achievement, was a combination of six subtests from the New York University (NYU) Early Childhood Inventory. It tested knowledge related to specific areas, including science, math, letters, numerals, shapes, and prepositions.

The second and third measures, the Preschool Inventory (Caldwell, 1967) and the Stanford Binet, were included as two of the best available measures of general cognitive development. Both are complex measures, however, and scores on them reflect numerous motivational factors as well as cultural experience and general learning ability (Zigler and Butterfield, 1968).

The fourth measure was the Hertzog-Birch scoring of the Stanford Binet. It analyzes the way a child responds to the Binet. A child may pass or fail an item in several ways. He may give a work response, for example, either by doing what is specifically required by the task (a delimited response), or by doing things which extend beyond the limits of the task (an extended response). In either case, his response may be verbal or nonverbal. A child also may give a nonwork response in any of several ways: he might provide an irrelevant verbalization instead of engaging in task-directed activity (substitution) or might not respond at all (passivity).¹² The Hertzog-Birch scoring provides a description of his style of coping with cognitive demands.

¹¹ An extensive effort has been made to develop a battery assessing numerous domains for the second and third year evaluations of Planned Variation in Head Start.

¹² Hertzog et al. (1968, pp. 13-15).

The fifth instrument, a measure of another component of response style, was the Maccoby Motor Inhibition Test. It requires a child to perform several tasks twice, once at his natural speed and once as slowly as he can. The difference between the two scores is considered a measure of his capacity to inhibit movement.¹³

Measures of Effects on Parents:

The analysis of programs' effects on parents included an assessment of mother-child interaction styles. This domain was included because:

- 1) previous research showed a strong relationship between the nature of mother-child interactions in a structured situation and children's success in both laboratory problem-solving tasks and in school (Hess et al., 1968; Bee et al., 1969; Hess et al., 1969) and 2) an objective of several Planned Variation models was to involve the parents in the program, particularly the mother, teaching her new techniques for interacting with her child in learning situations.

The Eight-Block Sort Task developed by Hess and Shipman (1965) was administered to study mother-child interaction. The task involves sorting eight blocks into four groups defined by two criteria. The blocks differ according to several attributes -- height, mark, color, and shape. Only two of these attributes are relevant to the sorting task: height (tall or short) and mark (X or O painted on the top).

The mother teaches the child to sort the blocks on the basis of height and mark. The child has to sort them this way and explain the reasons for the groupings. While the mother and child interact freely in this standardized

¹³Maccoby's original measure was adapted for use in the Head Start Planned Variation Study.

situation, several questions are explored. Among them are: How does the mother communicate information to her child? How does the mother structure the learning situation? In particular, does she provide her child with task-relevant information? How does she monitor and regulate the child's behavior? How are the child's performance and the mother's behavior related?

Another parent measure was a questionnaire developed by Stanford Research Institute. The items contained in the questionnaire tapped several areas, among them the following:

- . The extent of parental involvement in the Head Start program
- . Parent attitudes towards schools and towards other institutions influencing their lives
- . The things parents liked best about the Head Start program
- . The differences parents thought Head Start made in their lives.

THE SAMPLE

The sample in the first year Head Start Planned Variation study included:

- 1) children in the eight Planned Variation models, implemented in several classes in two communities each and 2) children in "regular" Head Start comparison classes, generally in the same communities.¹⁴

The total number of children in the sample was 2,647. Of these, 1,559 were in Planned Variation classes and 1,078 were in "regular" Head Start comparison classes. The children came from northern (5.3 percent), eastern (23.4 percent), southern (42.7 percent), central (21.2 percent), and western

¹⁴ In five cases comparison classes were in other communities since samples of non-Head Start children were not available in the same communities.

(7.4 per cent) states. Most (72 percent) were between $4\frac{1}{2}$ and $5\frac{1}{2}$ years old at the beginning of the Head Start program in the fall, although they ranged in age from 3 to $6\frac{1}{2}$ years. The sample included approximately half girls and half boys.

The ethnic composition of the sample was approximately 55 percent Black, 25 percent White, 7 percent American Indian, 2 percent Puerto Rican, and 1 per cent Mexican American (no information was available on the remainder of the sample.) This represents a composition fairly similar to that of the national Head Start program.¹⁵

The majority of parents in the sample had attended only grade school (43.1 percent) or had attended high school but had no additional formal schooling (49.5 percent). The most frequently reported employment of the heads of households was as an unskilled laborer (43.8 percent).

With respect to age, sex, ethnicity, and family background, children in the Planned Variation classes and children in the "regular" Head Start classes were essentially alike for the groups as a whole. There were, however, marked variations in these characteristics within given sites.¹⁶

IMPLEMENTATION FINDINGS

The first year data on implementation, like the other findings, are highly tentative. Implementation will be studied further in the second and

¹⁵ In the 1969 national Head Start program, 51 percent of the children were Black, 23.4 percent White, 2.3 percent American Indian, 6.6 percent Puerto Rican, 8.8 percent Mexican-American, .5 percent Eskimo, .2 percent Oriental, and 1.0 percent of other ethnic groups, with no information available on 6.2 percent.

¹⁶ Variations within given sites in these characteristics were dealt with through statistical controls in the data analysis.

third years of Planned Variation, after sponsors have had more time to develop training procedures. Still, some preliminary patterns are noteworthy.

One measure of implementation was derived from reports by program sponsors and Office of Child Development consultants. Table 1 presents the ratings of teacher implementation given by sponsors in the fall and the spring. These ratings indicated that:

- . Most teachers (67 percent) began the year in October low in implementation, although the majority had been given two weeks or more of preservice training
- . By the end of the year, a large number (75 percent) of teachers had achieved high or medium implementation. Thus, many of them made substantial progress during the year
- . There was a relationship between curriculum approach and success of implementation, such that:
 - 1) In both the fall and spring, the largest proportion of teachers rated high or medium in implementation was in the Preacademic models
 - 2) The proportions of teachers rated high in the Cognitive Discovery and Discovery programs were about equal, but more teachers were rated low in Discovery programs

At the end of the year, sponsors were asked to predict the performance of teachers during the second year of Planned Variation. Preacademic sponsors predicted that virtually all their first year teachers would perform as program exemplars by the next year. Cognitive Discovery and Discovery sponsors predicted slower rates of improvement, with little or no change for some teachers.

These data suggest that the changes in teacher behavior required by Cognitive Discovery and Discovery models may take a good deal of time to occur and may not realistically occur in all Head Start teachers. Some intrinsic characteristics of these models might explain this phenomenon. Most of them

Table 1
RATINGS OF TEACHER IMPLEMENTATION BY SPONSORS

Period	Teachers Ratings	Preacademic Models		Cognitive Discovery Models		Discovery Models		Total
Fall 1969	High	10%	3%	0%	5%			
	Medium	42%	21%	21%	28%			
	Low	48%	76%	79%	67%			
	N	19	28	14*	61			
16								
Spring 1970	High	55%	31%	44%	41%			
	Medium	45%	38%	13%	34%			
	Low	0%	31%	44%	25%			
	N	19	33	16*	68			

* Reflects only the Bank Street model.

require the internalization of a broad theory of child development. They require a teacher to initiate and respond to a large array of naturally occurring events in insightful, supportive ways which foster children's growth in numerous domains. The Precademic models, in contrast, provide discrete and highly specific pre-planned components in their daily operation. It appears that these kinds of differences influence the relative ease with which Head Start centers can implement a new model in a short time.

In addition to these intrinsic attributes of models, the study pointed to external factors which affect the process of implementation:

- . There was a relationship between the amount of teacher training provided by sponsors and success in implementation. The models with the most teacher training and support -- the preacademic models -- ranked highest in implementation.¹⁷
- . There was essentially no relationship between years of education and success in implementation for Planned Variation teachers. There was, however, a relationship between teacher's background and rating of performance in the "regular" Head Start comparison classes.

The second finding is especially noteworthy since the teachers in Planned Variation classes had, on the average, less previous academic training than teachers in the "regular" classes. Planned Variation classes had fewer teachers with bachelor degrees or further training (33 percent) than did "regular" classes (45 percent) and more teachers who had attended only high school or junior college (67 percent in Planned Variation and 54 percent in "regular" classes). The relationships between background and success in implementation

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There is some question as to whether the measures of the amount of teacher training are adequate indices of the quality of over-all teacher support--personal communication, Dr. Ronald Henderson.

suggest that sponsors' technical assistance may have provided the "know-how" teachers ordinarily gain through academic training and experience.¹⁸

The first finding -- more training and support in the Preacademic than in other models accompanied by greater early success in implementing these models -- raises the question of whether model content and training strategies are closely related to one another. Implicit in the Discovery models -- especially in the EDC pragmatic, action-oriented model -- is the notion of few precise specifications for teacher behavior or curriculum content. The EDC (and to a lesser degree the Bank Street) model is an advisory and consultant system which enables schools to move towards goals that are determined to a large degree by the particular community. In contrast, the Preacademic models (and to some extent the Cognitive Discovery models) are closer to "packages" having explicit, teachable components.¹⁹ The Planned Variation findings suggest that these different orientations influence both program content and the modeller's strategy and early success in fostering satisfactory operation.

The sponsors' and consultants' reports also indicated specific issues involved in implementing new early education models. For example, one recurrent issue that arose in the reports was that the models required complex changes in teacher behavior. In the fall, one consultant reported:

"The teacher is telling, rather than helping, the child discover (a difficult task for many teachers, yet a major component of this model). I'm not sure the teachers know what 'exploration and discovery' means. I think they think they discover for the child."

¹⁸ It must be kept in mind that these analyses refer to amount (in years) of training only, not to professional specialization (e.g., "degree in early education").

¹⁹ The distinction between "package" programs and consultant systems is taken from Gordon (in press).

Similarly, new teacher-aide relationships had to be worked out:

"The relationship between the teacher and assistant teacher is not implemented. The assistant teacher is used more for clean-up chores than as an assistant teacher. According to the model, the assistant teacher is supposed to plan with the teacher and work out different responsibilities in terms of the program."

In the spring, consultants reported important changes in many program components.

A typical description of teacher growth said:

"Much improvement has been made since the beginning of the program. The teachers have a better understanding and a more positive application of this model's approach. In these classrooms, there is better utilization of space as well as material. . . ." (Stanford Research Institute, 1971, pp. 95-100.)

The reports also pointed to additional external factors which facilitated ease of implementation. Successful operation was more likely to be reported in sites where:

- . Head Start facilities and materials were at least adequate. Some sites were subject to disruption due to heating, plumbing and lighting breakdowns and slow procurement of necessary equipment, while others enjoyed well-arranged, well-lighted, well-maintained and well-equipped quarters.
- . The Head Start program itself was stable. Some sites were disrupted by internal dissension, racial tensions, conflicts between the operating agency and other groups, and delays in funding, while other sites had stable, well-organized staff who worked together as a team and related well to other agencies.
- . Teachers felt that the sponsor had something to offer, either because the sponsor's field staff functioned as helpful educational consultants (almost independent of model content) or because the model content was something they really could use.

Observations in select classes provided additional, especially interesting information about implementation. These are among the first data describing the actual experiences that children have in educational programs based on different models. They indicate a wide range of diversity in the kinds of preschool experiences which can be provided for children.

In areas of primary importance to models, children's experiences reflected models' stated orientations. In these areas, models generally could be distinguished from one another and from "regular" Head Start classes. In areas of lesser importance to the models, there was considerable overlap in the nature of children's experiences in the various programs.

For example, the observations showed the following about program content:

- . Academic activities involving numbers and language occurred most frequently in Preacademic models.
- . Social Studies activities and puzzles and games teaching such things as colors, sizes and shapes occurred most frequently in Cognitive Discovery models.
- .. Expressive, role-playing activities such as doll play occurred most frequently in Discovery programs and "regular" classes.
- . "Regular" Head Start classes included a relatively large component of cognitive training -- as much as model programs except in the areas of primary concern to the models.

In addition to demonstrating a considerable correspondence between models' stated orientations and their actual content, the classroom observations added to the evolving picture of natural variations in "regular" Head Start classes. They demonstrated diversity, for example, in the frequency of academic language experiences provided to children (ranging from occurrence in 3 percent to 27 percent of the observation periods in "regular" classes), in puzzle and game experiences (ranging from occurrence in 4 percent to 23 percent of the periods observed), in the frequency of active indoor games (ranging from occurrence in 0 percent to 11 percent of the periods) and in the frequency of individualized instruction (ranging from occurrence in .2 percent to 6.7 percent of the observation periods in "regular" classes).

EFFECTS ON CHILDREN AND PARENTS

Measures of effects, even more than those on implementation, must be viewed as tentative and must be interpreted with caution. The implementation study demonstrated that successfully establishing models in new sites involves an extensive training effort for sponsor field representatives ("staffing up" time), for teachers and for communities. This suggests that program effects measured in early stages of implementation may not represent levels or patterns of achievement which may appear after two or three years of a model's operation.

Cognitive Measures

Keeping in mind that the data represent the first year of model implementation let us examine the measures of children's performance. The data showed that on the measures of academic achievement and general cognitive development the mean gains of all the Head Start children--in both model and "regular" classes -- were considerably larger than those attributable to usual maturational development in these children.²⁰ These gains, presented in Figure 1, were distributed across all classes and were statistically significant. One half of a standard deviation is often considered a "bench-mark" for judging the educational significance of a change. In this first year, over 75 percent of the children across all classes had gains as large as or larger than one half of a standard deviation. These findings suggest a measurable effect of Head Start on children's cognitive development.

²⁰ Changes greater than those attributable to usual maturational development in these children were derived by comparing the gains children made during the year with expected gains based on the fall scores of same-ethnicity cohorts who were the same age in the fall as were the Planned Variation children in the spring. It is important to recognize that this technique allowed for possible confounding of Sesame Street effects with Head Start effects.

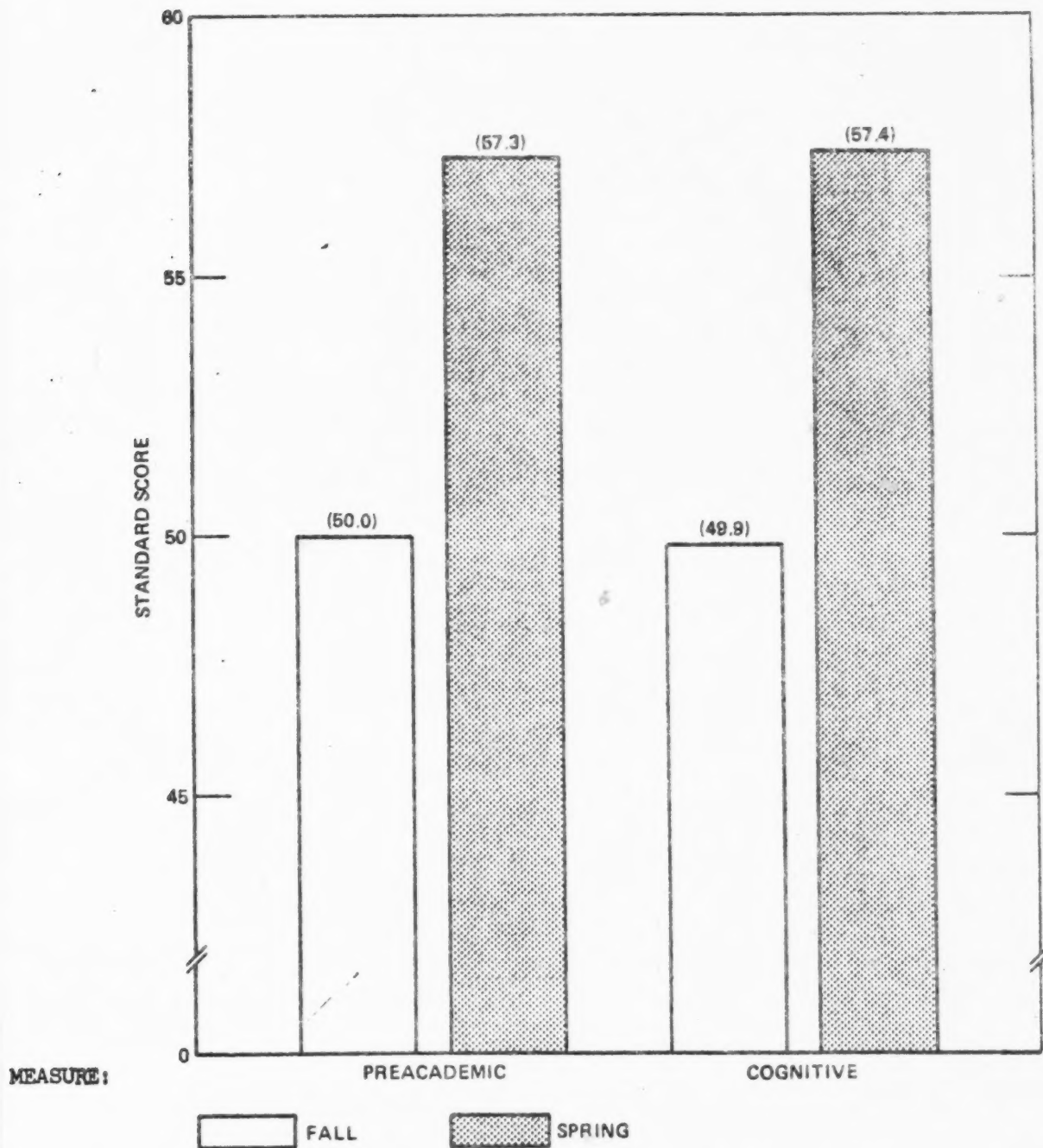


Figure 1. Average Fall and Spring Standard Scores on Precademic and Cognitive Measures for all Children. The Scores Are Standardized to a Mean of 50 and a Standard Deviation of 10.

Another preliminary finding was that children in Planned Variation classes made larger gains than children in "regular" Head Start classes on both cognitive measures. (See Figure 2.) The differences were quite small, but were statistically significant.

In order to compare the effects of different models, classrooms identified as high in implementation were studied. On both the measure of academic achievement and the measure of general cognitive development, trends suggesting largest gains in the Preacademic and Cognitive Discovery models emerged.²¹

Important suggestive patterns also emerged concerning the education and experience of teachers. In "regular" Head Start classes, children's gains on the two cognitive measures were related to teachers' professional background: children whose teachers had the most academic and practical experience made the largest gains. This relationship did not exist for children in model programs. The pattern supports the notion derived from the implementation study that sponsors' technical assistance may provide the "know-how" teachers ordinarily gain through academic training and experience.

Response Style Measures

The response style measures of motor inhibition and styles of coping with cognitive demands showed consistent and important effects of Head Start programs in areas previously little studied. Each of the measures showed changes manifesting increases in appropriate "response inhibition" in task situations. The increases were greater than those attributable to maturation alone and showed differences among programs consistent with their orientations.

²¹ The sample size in this comparison (children in well-implemented classes of the different models) was small, including only 20 classes--10 Preacademic, 8 Cognitive Discovery, and 2 Discovery.

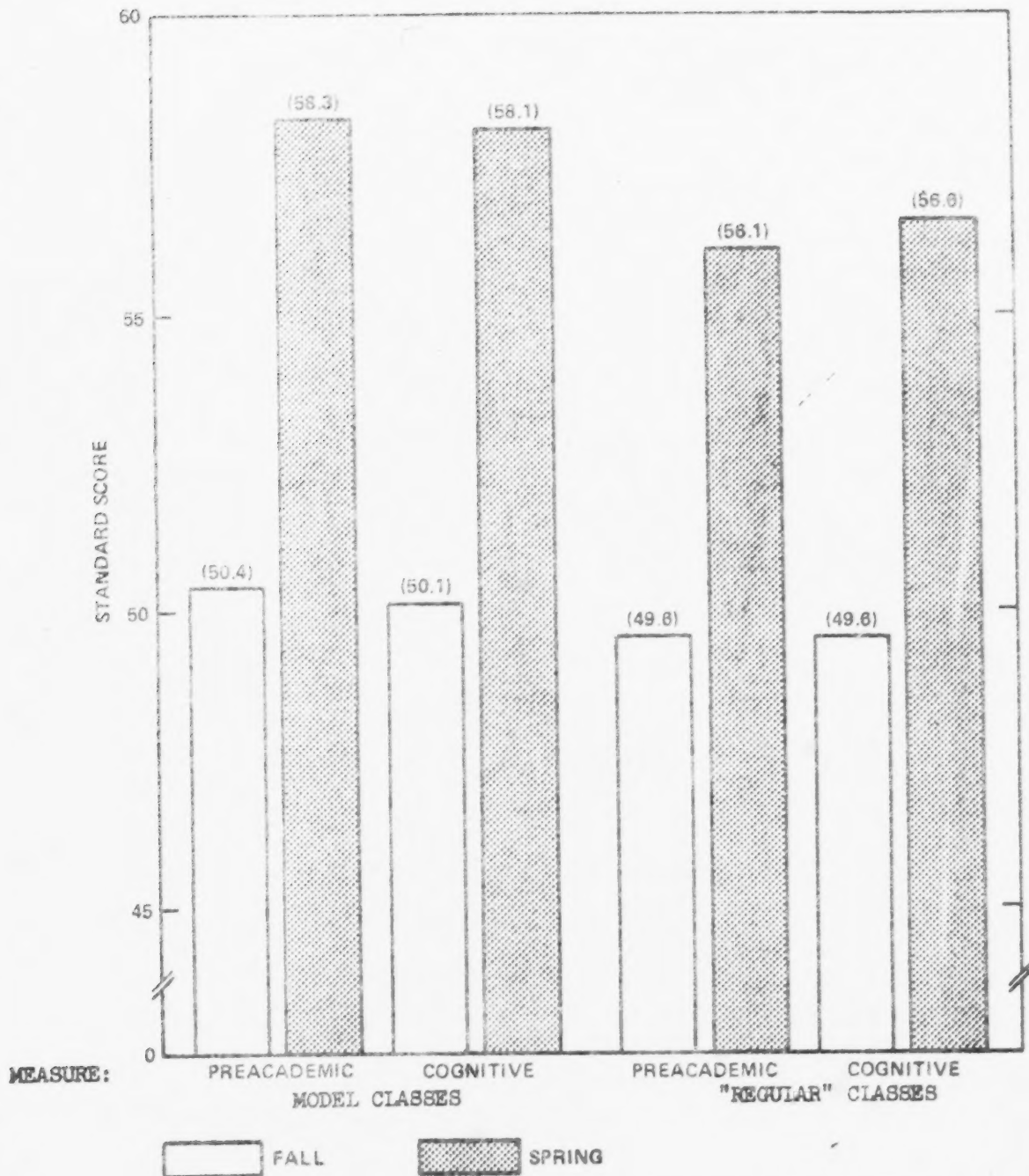


Figure 2. Average Fall and Spring Standard Scores on Preacademic and Cognitive Measures for Children in Model and "Regular" Classes.

On the Maccoby motor inhibition measure, children gained significantly. They were better able to inhibit motor responses in the spring than in the fall and the increases could not be attributed to maturational effects alone. The mean increases were approximately equal in model and "regular" Head Start classes, with the largest gains within model programs in Discovery classes.

The Hertzig-Birch measure of styles of coping with cognitive demands included two parts. One was an assessment of the nature of a child's nonwork responses to the Stanford-Binet -- what he did when he failed to work at the Binet task. This measure itself included two components -- substitutions and passive behaviors. Substitutions occur when the child offers an unnecessary verbal or nonverbal response instead of engaging in task-related activity. Passive responses are those in which a child simply does not respond. There were relatively large mean decreases in all programs in substitutions, and mean increases in all except Discovery programs in passive responses (see Table 2).²² These changes were larger than could be accounted for by maturation alone. Especially large increases in passive responses were found in Preacademic programs.

The second part of the Hertzig-Birch described components of a child's approach when he worked at Stanford-Binet tasks. This measure again included several aspects -- delimited and extended responses, both verbal and nonverbal. Delimited responses are those which are restricted to the defined requirements of the task. Extended responses are those which go beyond the limits of the task; they are spontaneous, unsolicited elaborations in action or speech. Scores on

²² We can evaluate the meaning of decreases in substitutions by looking at data on other children's styles of response to Binet tasks. Hertzig et al. (1969) found that a lower number of substitutions was made by middle-income than low-income children, suggesting that decreases in the Head Start sample are in the direction characteristic of successful performance in school situations.

Table 2

MEASURES OF CHILDREN'S NONWORK RESPONSES
TO THE STANFORD-BINET

Period	Component	Preacademic		Cognitive		Discovery Models	All		Total
		Models		Discovery Models			Model Classes	"Regular" Classes	
Fall 1969 Mean Score	Substitutions								
	1. Verbal	.93		1.18		1.03	1.06	1.35	1.20
	2. Nonverbal	2.27		2.66		1.71	2.24	3.18	2.67
	Passivity	6.56		2.57		2.85	3.70	3.04	3.40
Spring 1969 Mean Score	Substitutions								
	1. Verbal	.72		.26		.47	.45	.40	.43
	2. Nonverbal	1.70		.59		1.12	1.06	1.00	1.03
	Passivity	9.32		2.96		2.75	4.54	3.21	3.93

these measures indicated relatively large mean decreases in all programs in verbal and nonverbal extended responses (the data are presented in Table 3).²³ Again, the changes could not be accounted for by maturation alone.

These findings are extremely important because they demonstrate both a generalized effect of Head Start and a specificity of effects in an area not examined heretofore. Although there is a wealth of data in these response style measures, at least one consistent pattern of changes not attributable to maturation alone can be found in them. This consistent theme from the several measures is an increased appropriate "response inhibition" in situations much like those children will encounter in elementary schools. These changes suggest that the children have learned what a question is and what an appropriate answer is, that they have learned to focus on the essential components of school-like tasks, and to cope efficiently with these components.

Within the model programs, a striking specificity of effects was manifested. The Preacademic programs produced the largest increases in passivity -- the situation where a child simply provided no response to an item whatsoever. These findings may reflect the orientation of these programs which emphasizes the child's only responding with correct verbal responses in the classroom situation. Similarly, the largest increase in motor inhibition was in the Discovery programs -- models which focus on the child's exploring a classroom rich in responsive materials and on the child's learning to respect other children's rights and desires--
foci which might well foster control over motor impulses.

²³ Hertzog et al. (1969) found that middle-class children were likely to make at least one verbal spontaneous extension during administration of the Stanford-Binet. It is difficult to interpret the decrease in extended responses in the Head Start sample, however, since the measure used in the evaluation was the total number of extended responses given by a child (not whether he made at least one extension--the measure used by Hertzog et al.).

Table 3

MEASURES OF CHILDREN'S WORK RESPONSES
TO THE STANFORD-BINET

Period	Component	Cognitive				Total
		Preacademic Models	Discovery Models	Discovery Models	All Model Classes	All "Regular" Classes
Fall 1969 Mean Score	Delimited Responses					
	1. Verbal	29.62	27.73	30.21	29.06	28.41
	2. Nonverbal	25.17	34.16	39.46	36.22	37.47
	Extended Responses					
	1. Verbal	.58	.49	.56	.54	1.15
	2. Nonverbal	2.75	2.56	1.83	2.36	2.96
Spring 1969 Mean Score	Delimited Responses					
	1. Verbal	28.35	24.27	27.54	26.44	26.24
	2. Nonverbal	38.89	40.02	41.10	40.09	39.46
	Extended Responses					
	1. Verbal	.15	.10	.11	.12	.16
	2. Nonverbal	.52	1.11	.89	.88	1.23
						27a
						.81
						2.64

Mother-Child Measures

The measures of mother-child interaction styles showed changes generally consistent with the cognitive measures. These changes, like others reported in this chapter, were important because they demonstrated effects in areas not previously reported for Head Start. Several mother-child interaction dimensions were examined using the Hess and Shipman Eight-Block Sort Task. This task requires: (1) a mother to teach her child a particular method of sorting eight blocks and (2) the child to sort the blocks in this manner and explain the basis for the sorting. The following components of mothers' and children's behavior were studied:

- . Maternal verbal communication -- the total amount of task-related communication from mother to child
- . Maternal task description -- the specific information about performing the task given by the mother to the child
- . Maternal Regulation -- amount of verbal praise (high score) and blame (low score) provided a child by the mother
- . Child verbal responsiveness -- the extent to which the child discussed the task with his mother
- . Child success -- the child's success in grouping the eight blocks correctly and in explaining the grouping.

The mother-child interaction data for all the Head Start children are presented in Figure 3. As illustrated there, maternal verbal communication, maternal regulation, child verbal responsiveness, and child success all increased from fall to spring. In the spring, mothers talked more to their children and children talked more to their mothers. The largest change from fall to spring, however, was in children's success scores. These scores may reflect both the effects of Head Start on learning skills and the consequence of changes in mother-child interaction patterns. The increases in all the areas were considerably larger than would be expected from typical maturational changes for low-income children.

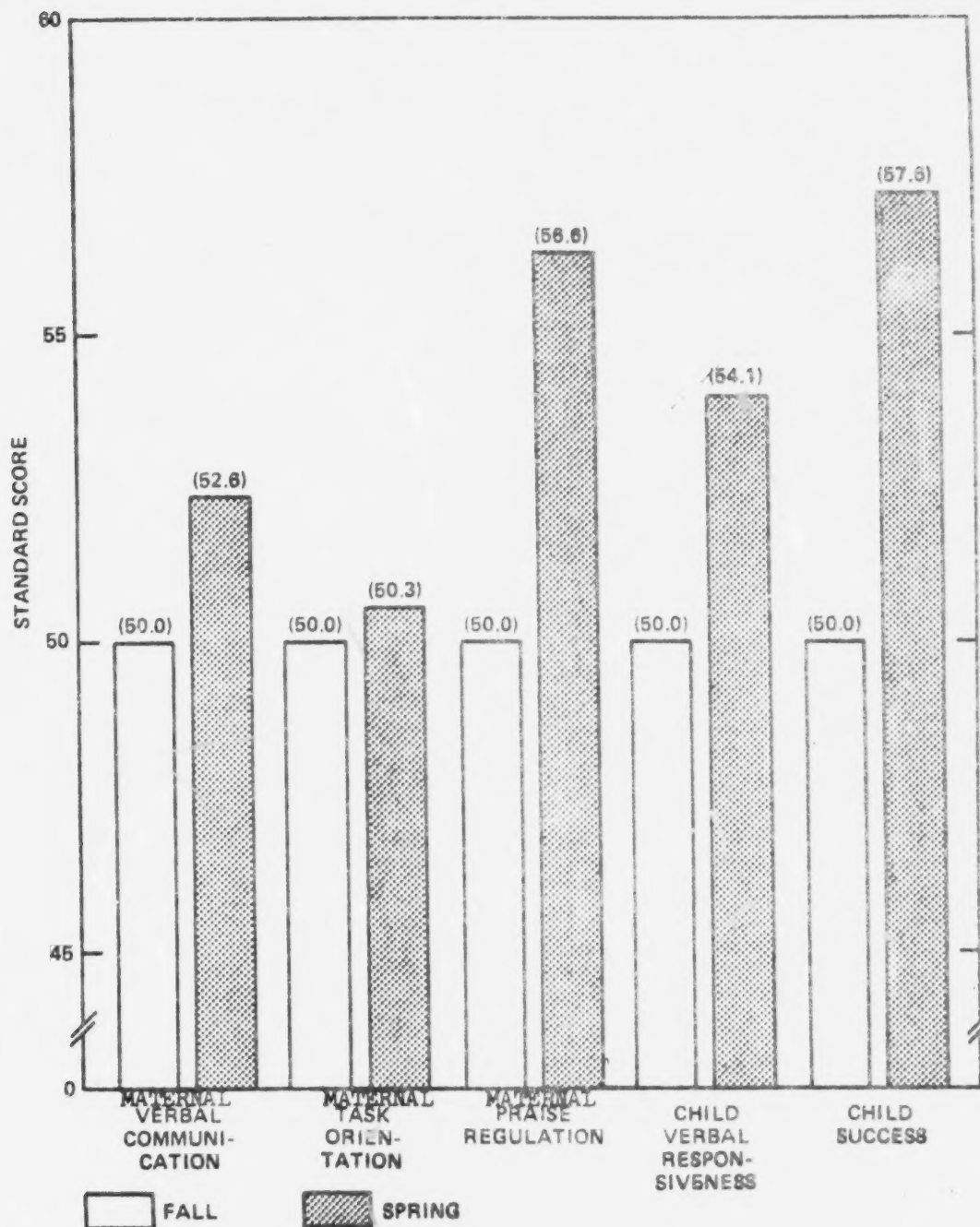


Figure 3. Average Fall and Spring Standard Scores on the Mother-Child interaction Task for all Children

Mothers of children in model and "regular" Head Start classes changed about equally in their styles of verbal interaction. Children in model programs, however, had significantly greater increases in success on the sort task than children in "regular" classes. This parallels the finding of greater gains for these children on other measures of cognitive functioning.

Within model classes, the largest gains on maternal dimensions were made by parents of children in Cognitive Discovery and Preacademic classes. Gains in maternal use of praise were particularly high in the latter. In addition, children in Preacademic classes made the largest increases on the child success measure. Like the earlier reported findings on cognitive functioning, these trends indicate generally positive effects of particular models in areas congruent with their orientations. All the findings of maternal changes are particularly important, of course, because changes in mothers' behavior may be transmitted to other children in the family, promoting their growth as well as the growth of the Head Start children.

Parental Questionnaire

The final parent measure, the questionnaire, showed interesting variations among Head Start classes. In response to the question, "What difference has Head Start made in your own life this year?", a large number of parents in "regular" programs answered in terms of babysitting and day care facilities. In model classes, parents were more likely to emphasize changes in the parent-child relationship and in the child's and the parents' self development. The answers to this question are given in Table 4. They reflect a correspondence between models' orientations and parents' responses.

Parents were also asked, "What are the things you like most about Head Start?" Again, a clear match between models' orientations and parents' answers emerged. Figure 4 gives the responses to these questions. In general, the

Table 4

RESPONSE TO PARENT QUESTIONNAIRE ITEM:
 "What difference has Head Start made in your own life this year?"

Response Category	"Regular" Classes	Preacademic Models	Discovery Models	Cognitive Discovery Models	Parent* Educator Model
91	15.7%	14.6%	16.8%	12.6%	
16	11.3	16.9	15.2	14.8	13.9
21		14.6		12.6	
45		12.4	11.2		11.1
22			11.2		13.9
13			10.4		
93				12.6	
14					13.9

31

33

% - percentage of responses; percentages not listed are below 10%.

Legend: 91 Head Start acts as baby-sitting or day care service.
 16 Relationship to my own child.
 21 Relationship with teachers, school, or other adults.
 45 Opportunity for learning.
 22 Parent self-development learning.
 13 Child's self-development and self-concept.
 93 No change.
 14 Relationship between teacher and child.

* Data from the Florida parent-educator model were analyzed separately were due to the importance of these variables to the model.

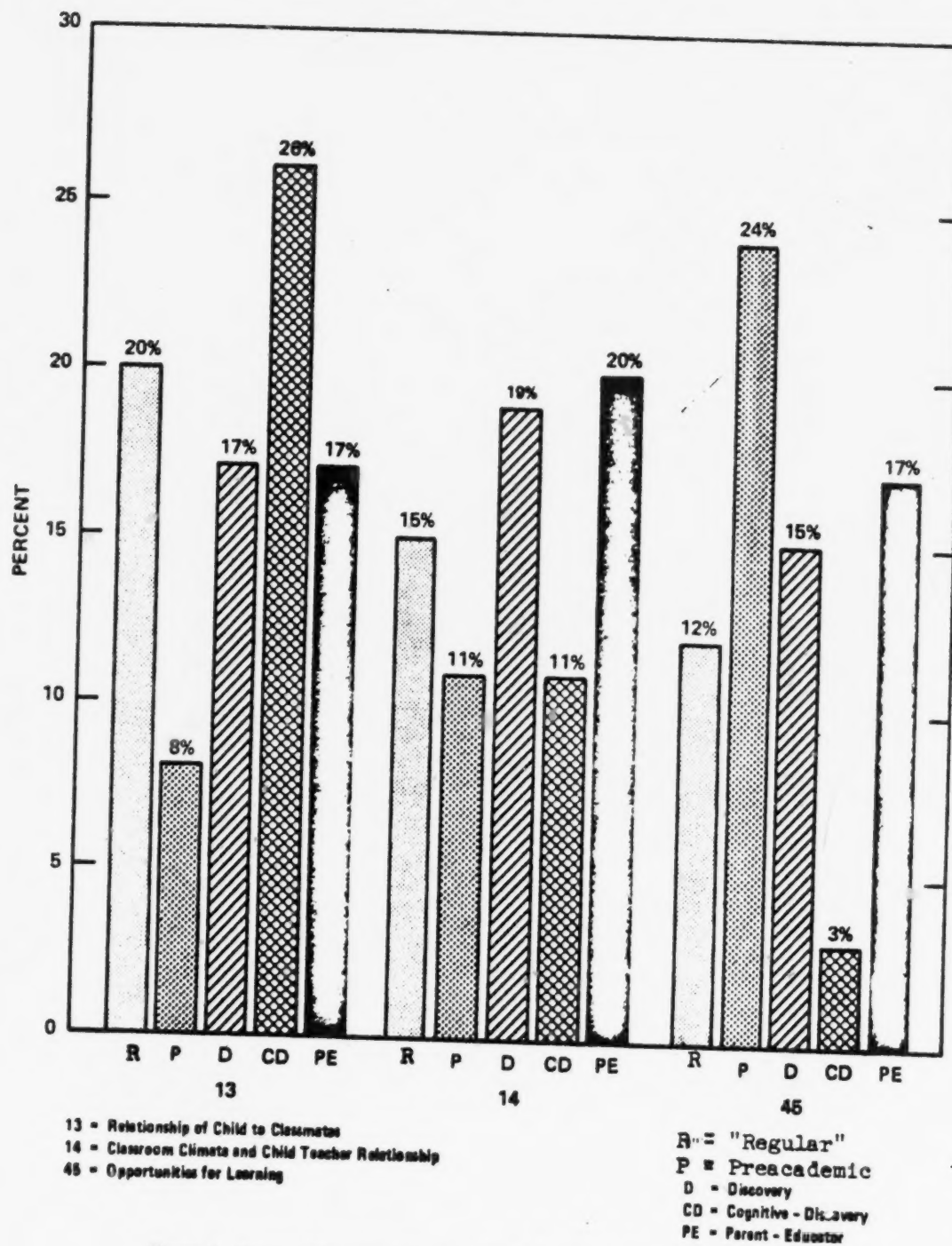


Figure 4. Program Type and What Parents Liked Best About Head Start

parents of children in Preacademic programs stressed academic performance and learning improvements. In other models, parents placed relatively more emphasis on the relationships among children and between teachers and children. These findings are important because they suggest that parents understand and internalize the orientations of different Head Start models. They suggest that the developmental goals held for children and their families by Head Start programs can be successfully transmitted to parents.

An additional set of questions tapped parental contact and involvement with Head Start. Responses suggested more participation on the part of parents in "regular" than in model programs. In view of the significance of this dimension, the finding suggests the importance of sponsors' seeking ways in which parents can be more involved participants within the framework of the model.

SOME INTERPRETATIONS OF THE FINDINGS

In summarizing the first year findings of effects on children and parents, it is important to view them in the perspective of previous comparative evaluations of preschool intervention programs. When the Head Start Planned Variation study was undertaken in 1969, two patterns of program effects had been documented in research projects involving a small number of models and children in particular locations. One comparative evaluation (Weikart, 1969) had demonstrated an equality of effects of well-implemented programs: three different preschool curricula, all with highly trained teachers and careful program supervision, had produced approximately equal gains in children's cognitive performance and academic achievement.

Several other comparative evaluations (Di Lorenzo et al., 1969; Karnes et al., 1969; Miller and Dyer, 1970) had yielded findings consistent with the

notion of a specificity of effects. In each of these comparisons, programs with particular emphases and well-formulated objectives in specific areas did indeed have larger effects in these areas than did other programs.

The first year Head Start Planned Variation findings suggest that a global appraisal supports the equality of effects pattern, but more differentiated analyses point to a pattern of specific effects. Equal effects of well-implemented curricula were reflected in the fact that although there were some significant differences among models, the more striking findings concerned the large effects of all well-implemented classes and the frequent (although small) favoring of model over "regular" classes. At the same time, a specificity of effects was manifested such that programs with well-formulated objectives in particular areas did produce effects consistent with their orientations. This specificity was reflected on measures of achievement and cognitive functioning, on measures of response style, and on the parental questionnaire.

The measures of programs' effects in the second and third years of the Head Start Planned Variation study should help to further clarify these patterns. Measures of such additional domains as motivation, persistence, curiosity and initiative, and more differentiated information in the areas of cognitive and language development will be collected. These measures should contribute to the emerging picture of the effects of preschool compensatory education and should serve to test the tentative results presented in this chapter.

PLANNED VARIATION IN FOLLOW THROUGH

History of Follow Through

Project Head Start, undertaken by the Federal Government in 1965, focussed national attention on the importance of experiences in the early years of life for promoting children's optimal development. The need for a Follow Through program to accompany Head Start and to continue compensatory education into the early elementary grades became evident as Head Start evaluations reported time and again that children made large gains in achievement during the preschool year, but that increases in their rate of development usually were not sustained when they entered the public school system. The importance of a Follow Through program was also suggested by a few scattered studies which demonstrated that continuation of compensatory education into kindergarten and the early elementary grades did sustain or further increase preschool gains (Beller, 1969; Erickson et al., 1969; Karnes et al., 1969).

Designed to extend Head Start services from preschool into the primary grades, Follow Through was begun as a pilot venture in the fall of 1967. Its purpose was spelled out clearly in Section 222(a) of the Economic Opportunity Act, P.L. 90-22, which authorized:

"A program to be known as 'Follow Through' focussed primarily upon children in kindergarten or elementary school who were previously enrolled in Head Start or similar programs and designed to provide comprehensive services and parent participation activities. . . which the Director finds will aid in the continued development of children to their full potential. . . "

Follow Through was to be a comprehensive program providing for the educational, emotional, physical, medical, dental and nutritional needs of elementary school children previously enrolled in Head Start. Parents were to participate actively in major decision-making and day-to-day operations

involved in the development and conduct of the program at the local level. Although authorized under the Economic Opportunity Act, Follow Through was to be administered under a delegation of authority from the Office of Economic Opportunity to the U.S. Office of Education in the Department of Health, Education, and Welfare.

Early in Follow Through's history, the decision was made that it should be an experimental program designed chiefly to produce information which would be useful if the program was expanded to nationwide service proportions. As a result, Follow Through undertook a strategy of planned variation to assess the effectiveness of a variety of different approaches for working with disadvantaged children and their families in a number of different cultural and environmental settings throughout the country. During the 1970-71 school year, the Stanford Research Institute undertook the first national evaluation of Follow Through. Most of the data in this chapter is based on that evaluation.

The number of communities involved in Follow Through rose from 39 communities serving 2,400 poor children during the 1967-1968 school year to 174 communities serving 60,000 poor children during the 1970-1971 school year. Of the 60,000 children from low-income families enrolled in Follow Through projects during 1970-1971, approximately 15,000 were in kindergarten, 22,400 in first grade, 15,300 in second grade and 7,300 in third grade.

Half of the children in each Follow Through project are expected to be graduates of full-year Head Start or similar preschool programs. The Follow Through project in a particular community typically begins with the earliest grade in a school (kindergarten or first grade), and progressively adds a higher grade each year as the original Head Start children advance up to the third grade.

At the local level, Follow Through, like Head Start, has been shaped by the program's focus on improving the child's "life chances," not simply his chances to succeed in school. In order to fulfill this broad mandate, projects have emphasized a variety of aspects of the child's development, including his academic achievement, confidence, initiative, autonomy, task persistence, and good health. Projects have worked with a range of institutions which influence the child's continued growth, including families, schools, community health services, welfare departments and other social service agencies.

Follow Through Approaches

In the school year 1969-1970, the year during which the Stanford Research Institute first year evaluation was undertaken, Follow Through included fourteen different approaches which qualified for inclusion in the evaluation. These approaches, as well as the remaining approaches which will be included in subsequent evaluations, were considered to be promising methods for working with disadvantaged children and families and were unique in some significant ways.²⁴ Nevertheless, as with the Head Start Planned Variation models, the sponsors share common orientations. All of them seek to develop children's learning abilities. All are convinced of the importance of individual and small group instruction and frequent interchange between children and concerned adults. All attempt to make learning interesting and relevant to the child's cultural background. All believe that the child's success in learning is inseparable from his self-esteem, motivation, autonomy, and environmental support, and all attempt to promote successful development in these domains

²⁴ Subsequent evaluations will include the six additional Follow Through approaches, bringing the total number of approaches to twenty.

while fostering academic goals. The sponsors differ among themselves chiefly in the priorities which they assign to these objectives and in the sequences through which they pursue them.

Several of the sponsor approaches are complementary and have been operated in combination by various Follow Through communities. Some approaches, for example, are primarily concerned with parental involvement and community control, while others place primary emphasis on the curriculum, the teacher, and the classroom (Stanford Research Institute, 1971b, p. 3).

The fourteen different approaches in the first year Follow Through evaluation can be categorized into five groups on the basis of their primary emphasis in working with disadvantaged children and their families. These five categories are the Structured Academic approaches, the Discovery approaches, the Cognitive Discovery approaches, the Self-Sponsored approaches, and the Parent-Implemented approaches.

The first sponsor group, the Structured Academic approaches, place heavy emphasis on teaching academic skills and concepts within the classroom through programmed instructional techniques. As in the Head Start Preacademic models, each of these approaches uses an analysis of the components which make up desired behavioral objectives to guide a careful sequencing of learning experiences and a consistent use of external reinforcement. Highly structured educational environments are used by all these sponsors to "engineer" accelerated rates of learning, although they vary among themselves in the specific curriculum content, in the degree of individualized learning, in the respective roles played by teachers, parents, and materials, and in the emphasis placed on the child's initiative and autonomy. The five approaches in this group are:

The behavior analysis model sponsored by Don Bushell, Jr., Support and Development Center for Follow Through, University of Kansas--In this approach,

teachers use a token system of positive reinforcement and individualized programmed materials to teach skills in taking the social role of the student as well as academic skills in the areas of language, reading, writing, and mathematics; parents are hired to work in the classroom alongside of teachers as behavior modifiers and tutors.

Individually prescribed instruction and the primary education project sponsored by Lauren Resnick and Warren Shepler, Learning Research and Development Center, University of Pittsburgh--These approaches provide an individualized, sequenced program of instruction for each child which teaches him academic skills and concepts in the areas of language, perceptual motor mastery, classification and reasoning. Diagnostic tests determine each child's strengths and weaknesses and are used by the teacher to prescribe instructional materials appropriate for his needs; positive reinforcement is given continually for success in learning.

The language development-bilingual education approach sponsored by Juan Lujan, Southwest Educational Development Laboratory--This approach was originally designed to meet the educational needs of poor Spanish-speaking children (it is currently being adapted for use with French and other non-English-speaking children as well) and teaches mathematics, science and social studies in the children's native language while simultaneously teaching English as a second language; its methods include extensive use of structured drill techniques, reliance on materials relevant to the children's native background and experiences, and development of oral language prior to written language.

The mathemagenic activities program sponsored by Charles Smock, School of Education, University of Georgia--Of central importance to this approach is the emphasis on children's learning by doing in a sequentially structured environment designed to teach skills and concepts in mathematics, language, science, social studies, art, music and physical education; children learn through self-initiated, inductive solving of problems which are finely sequenced to assure both advances in understanding and a high level of positive reinforcement.

The systematic use of behavioral principles program sponsored by Siegfried Engelmann and Wesley Becker, Department of Special Education, University of Oregon--The primary focus of this program is on promoting skills and concepts essential to reading, arithmetic and language achievement through structured rapid-fire drills and reinforcement techniques using rewards and praise to encourage desired patterns of behavior; small study groups of five to ten children are organized by teachers according to ability levels in order to facilitate presentation of patterned learning materials and to elicit constant verbal responses from children.

The basic goal of the second group of sponsors, the Discovery approaches, is to promote the development of autonomous, self-confident learning processes in children rather than simply transmitting specific knowledge and skills.

Although like the Structured Academic approaches they focus on children's classroom experiences, their emphasis is not on teaching a programmed sequence of materials, but rather on promoting exploration and discovery in an environment which is responsive to children's own initiative. Heavy emphasis is placed on intrinsic motivation and the gratification children derive from mastery itself. Cognitive growth is seen as only one component of the child's total ego development, inseparable from a positive-self-concept, curiosity, independence, and the ability to cooperate with others. The three Discovery approaches are:

The Bank Street College model sponsored by Elizabeth Gilkeson, Bank Street College of Education--By functioning as consistent adults that children can trust, by being responsive to individual children's needs, and by sensitizing them to sights, sounds, feelings and ideas, Bank Street teachers help children build positive images of themselves as learners; they introduce themes of study and play relevant to classroom life, encourage children to explore various media, support children's making of choices and carrying out plans, and help them use language to formulate ideas and feelings in order to promote self-confidence, environmental mastery, and language expressiveness.

The Education Development Center model sponsored by George Hein, Education Development Center--This approach fashions classroom environments responsive to the individual needs and styles of children and teachers in accordance with the "open classroom" concept which has revolutionized British primary schools over the last several years; it is an advisory and consultant system which encourages schools and teachers to experiment with diverse avenues for fostering children's self-respect, respect for others, imagination, curiosity, persistence, openness to change, and ability to challenge ideas.

The responsive environment model sponsored by Glen Nimnicht, Far West Laboratory for Educational Research and Development--In this approach, children are free to set their own learning paces and to explore the classroom environment which is arranged to facilitate interconnected discoveries about the physical environment and the social world; the two primary objectives--helping children develop a positive self-image and promoting their intellectual ability--are achieved through use of self-correcting games and equipment which emphasize problem-solving skills, sensory discrimination and language ability and which provide immediate feedback and enjoyment from learning itself.

The third group of sponsors, the Cognitive Discovery approaches, are less systematically similar to one another than those in either the Structured

Academic or Discovery groups. In general, they promote the growth of basic cognitive processes such as reasoning, classifying and counting through highly directed teaching of specific academic skills, through children's autonomous discovery, and through constant engagement of children in verbal activities. These approaches share a willingness to be eclectic and to include diverse program elements in their curricula. The four approaches in this group are:

The cognitively oriented curriculum model sponsored by David Weikart, High Scope Educational Research Foundation--Derived from the theories of Piaget, this model fosters children's understanding of five intellectual domains--classification, numbers, causality, time and space--through experimentation, exploration and constant verbalization on the part of the children, through planning of detailed lessons on the part of the teachers and through extensive observation and assistance on the part of supervisors; a home-teaching program provides an opportunity for parents to become directly involved in the education of their children.

The Florida parent educator model sponsored by Ira Gordon, University of Florida--In addition to providing ways to improve classroom organization and teaching patterns, this model trains parents to supervise learning tasks in the home in order to increase their children's intellectual, personal and social competence; a key element in the program is hiring mothers of Follow Through children as parent-educators who function as teacher's aides in the classroom and who work with other mothers in their homes. The curriculum is flexible and varies according to the needs of particular individuals and classes, but there is an orientation towards the theories of Piaget.

The interdependent learner model sponsored by Don Wolfe, New York University--In this model, learning occurs principally in structured small-group instructional "games" where children of different ability levels teach one another and become relatively independent of the teacher. The verbal transactions between children which are implicit in the process are a direct stimulus to language development; experiences in phonic blending and decoding skills stimulate reading ability, and language-math-logic games such as Cuisenaire rods and matrix boards promote mathematical understanding.

The Tucson early education model sponsored by Joseph Fillerup, University of Arizona--Major objectives of this model are to promote language competence, intellectual skills necessary for learning (e.g., the ability to attend, recall and organize), positive attitudes towards school and learning, and skills in particular subject areas (such as reading and mathematics) and in social interaction; methods emphasize individualized experiences and interests as well as the generous use of positive reinforcement by teachers.

The fourth group of sponsors, the Self-Sponsored approaches, are similar to one another in unique characteristics of sponsorship rather than in the

educational processes they employ. All the projects in this group are Self-Sponsored, meaning that the local school district staff has played the role of architect and implementor of the Follow Through project.²⁵

The fifth group of sponsors are also similar in unique characteristics of sponsorship, in this case each of them being Parent-Implemented and not having a secondary affiliation with a particular instructional model. These projects may differ considerably from one another in the approach and style of their educational tactics, but all share a commitment to high levels of parent participation in policy making, program planning, and classroom operation.

FOLLOW THROUGH EVALUATION

The purpose of the planned variation strategy in Follow Through, like the Head Start Planned Variation strategy, is to develop information about the design and implementation of educational programs intended to overcome the effects of poverty on young children. In order to begin providing this information, the Stanford Research Institute evaluation of Follow Through examined the impact of different approaches on the children enrolled, their parents, and their teachers. The evaluation also described classroom processes in various different approaches, a procedure intended to shed light on the relationships between educational environments and their patterns of effects.

The design of the Follow Through evaluation is quasi-experimental since neither communities, schools, classrooms nor children are randomly assigned to either "treatment" or "control" groups or to a specific approach within

²⁵All self-sponsored projects are from the initial group of districts that joined the Follow Through experiment in 1967-68 before the planned variation strategy was undertaken.

Follow Through. The effects of the program on participants are measured through comparisons with non-participants whose family and community characteristics approximate those of Follow Through children. In most cases, these comparison classrooms have been located in the same school district as the associated Follow Through project, although in some cases comparison groups have had to come from neighboring communities. Two critical problems which have confronted the Follow Through evaluation are: 1) the difficulties in locating comparison groups which match the Follow Through groups in characteristics related to educational success and 2) the lack of assurance that selected comparison classrooms represent "conventional" educational environments. The fact that participation as a comparison class may itself lead to changes in a school, the possibility that comparison groups participate in other special impact programs designed to help disadvantaged children, and the possible diffusion of effects from Follow Through to comparison classes all are likely to make estimates of Follow Through's effects conservative.

The evaluation considers the first year of any sponsor's participation in the program and the first year in a new school district as implementation years. The data in this chapter concern the efficacy of "mature" Follow Through projects during the 1969-1970 school year, defined as those in their second or third year of operation during that school year. Of the twenty Follow Through approaches, fourteen were in at least their second year of operation during 1969-1970 and, therefore, were included in the evaluation. Only sponsor groups were contrasted with one another in this evaluation, since the differences among approaches in the sequences through which they pursue various objectives suggest that children should participate in them for the full duration of Follow Through (i.e., through the third grade) before comparisons among individual approaches are made.

Measures of Effects

The instruments in the 1969-1970 evaluations were primarily concerned with assessment of:

- . children's academic achievement in reading, language skills, arithmetic ability and related areas
- . children's attitudes towards school and learning
- . children's interpersonal feelings towards teachers and classmates
- . parents' participation in Follow Through and other educational programs, their feelings of efficacy in relation to their own lives, the school and the community, and their support for their children's educational progress
- . teachers' classroom practices and their educational goals and expectations for Follow Through children
- . the nature of Follow Through projects as described in sponsors' ratings and systematic classroom observations.

Follow Through's success in promoting academic achievement was measured through a battery consisting of items drawn from the following instruments:

Lee-Clark Reading Readiness Test
 Metropolitan Readiness Test
 Early Childhood Inventories Project, New York University
 Preschool Inventory
 Stanford Achievement Test
 Metropolitan Achievement Test
 The Comprehensive Test of Basic Skills
 Wide Range Achievement Test
 Individual items contributed by sponsors

Follow Through's effects on children's attitudes towards school and learning were assessed through questions focussing on:

- . how children felt about learning from books
- . what they thought about coming to school in the morning
- . how they felt about learning new things.

Children expressed their feelings by marking one of three faces in a test booklet--a smiling face (feeling good), a neutral face (feeling neither particularly good nor bad), or a frowning face (feeling bad).

Children's interpersonal feelings were studied through questions about their feelings towards their teacher and their classmates. Again, children responded by marking a smiling face, a neutral face, or a frowning face, and these responses were considered indices of good, indifferent or bad feelings.

In each of these domains, Follow Through's effects on children were measured through comparisons of changes in participants and non-participants. In addition, effects of various different Follow Through approaches and effects on various sub-groups of children were examined through analysis of changes in terms of sponsor groupings of programs, extent of Follow Through services received, prior enrollment in Head Start, and income level of family.

The effects of Follow Through on parents were also examined in the evaluation. Although different Follow Through approaches vary in the nature of their emphasis, all of them consider parental participation of definite importance. Effects on parents were measured through interviews which focussed on several dimensions, including the amount of support given in the home to the child's academic activities, the parents' feelings of self-esteem and effectiveness in dealing with schools, and the parents' awareness of, participation in, and satisfaction with Follow Through.

The effects of Follow Through on teachers' classroom practices and educational goals for children were also studied in the evaluation. These effects were examined in a questionnaire encompassing the following areas:

1. Demographic information and background
2. Classroom practices
3. Availability and use of equipment and materials
4. Educational goals for children

5. Information and attitudes about home visits and parent participation in the classroom
6. Knowledge about Follow Through, manner of involvement with the program and opinions about its effectiveness
7. General assessment of children's progress.

A final area of primary concern--describing the nature of different Follow Through projects--was carried out through sponsors' ratings of sites and through systematic classroom observations. Sponsors' ratings included an overall assessment of each project and an assessment of individual teacher's performance along dimensions important to the model. Structured classroom observations provided additional descriptions of various Follow Through approaches. The classroom observation instrument, also used in the Head Start Planned Variation study, was used to record such things as classroom activities, classroom atmosphere, and the interactions among children and teachers. These observations were collected only in the eight Follow Through approaches that were also included in the Head Start Planned Variation experiment.

The Sample

The 1969-70 sample included school districts in which the Follow Through program had been fully operating for at least one previous school year.. Children in these districts participating in Follow Through classes either began their public school experience in Follow Through classes or began public school in "conventional classes" and then entered Follow Through classes. Since Follow Through is designed to assess the impact of continuous, systematically coherent educational programs beginning upon entrance into public school, children whose entire schooling was in Follow Through classes are of primary concern here, and information in this chapter focuses primarily on them, their families and teachers.

The evaluation sample contained 2,623 children who participated in mature Follow Through classes in kindergarten and a comparison group of 1,303 non-Follow Through kindergarten children. It also contained 1,119 children from mature Follow Through first grade classes (in school districts having no kindergarten) and a comparison group of 753 first graders from non-Follow Through classes.

Of the Follow Through children in the sample, most (60%) on whom information was available had received a full array of services prescribed by the Follow Through guidelines. Almost one-third (30%) were from families that definitely fell below the Office of Economic Opportunity (OEO) poverty line, approximately one-quarter (27%) from families that did not meet the OEO poverty definition, and the remainder (approximately 43%) from families for whom fine-grained family background data were not available. The majority (60%) of the Follow Through children had participated in Head Start or equivalent preschool programs. Although the poverty distributions for the Follow Through and non-Follow Through samples were similar, a considerably smaller proportion of the non-Follow Through children (approximately 30%) had attended Head Start or equivalent compensatory preschools. Follow Through and comparison samples differed slightly in average age of children, education of parents, and ethnicity. Generally, Follow Through children were somewhat younger and were from families of slightly higher educational attainment than non-Follow Through children, with the median level of education completed by Follow Through parents in the high school range but the median educational attainment of comparison parents close to eighth grade. The proportion of White children was lower in the Follow Through sample, of Black children was approximately equal in the two, and of non-Black minority

children was higher in the Follow Through than the comparison sample. On other demographic variables, including family size and the occupation and income of the head of the household, the Follow Through and non-Follow Through samples were essentially similar.

EFFECTS OF FOLLOW THROUGH ON CHILDREN AND PARENTS

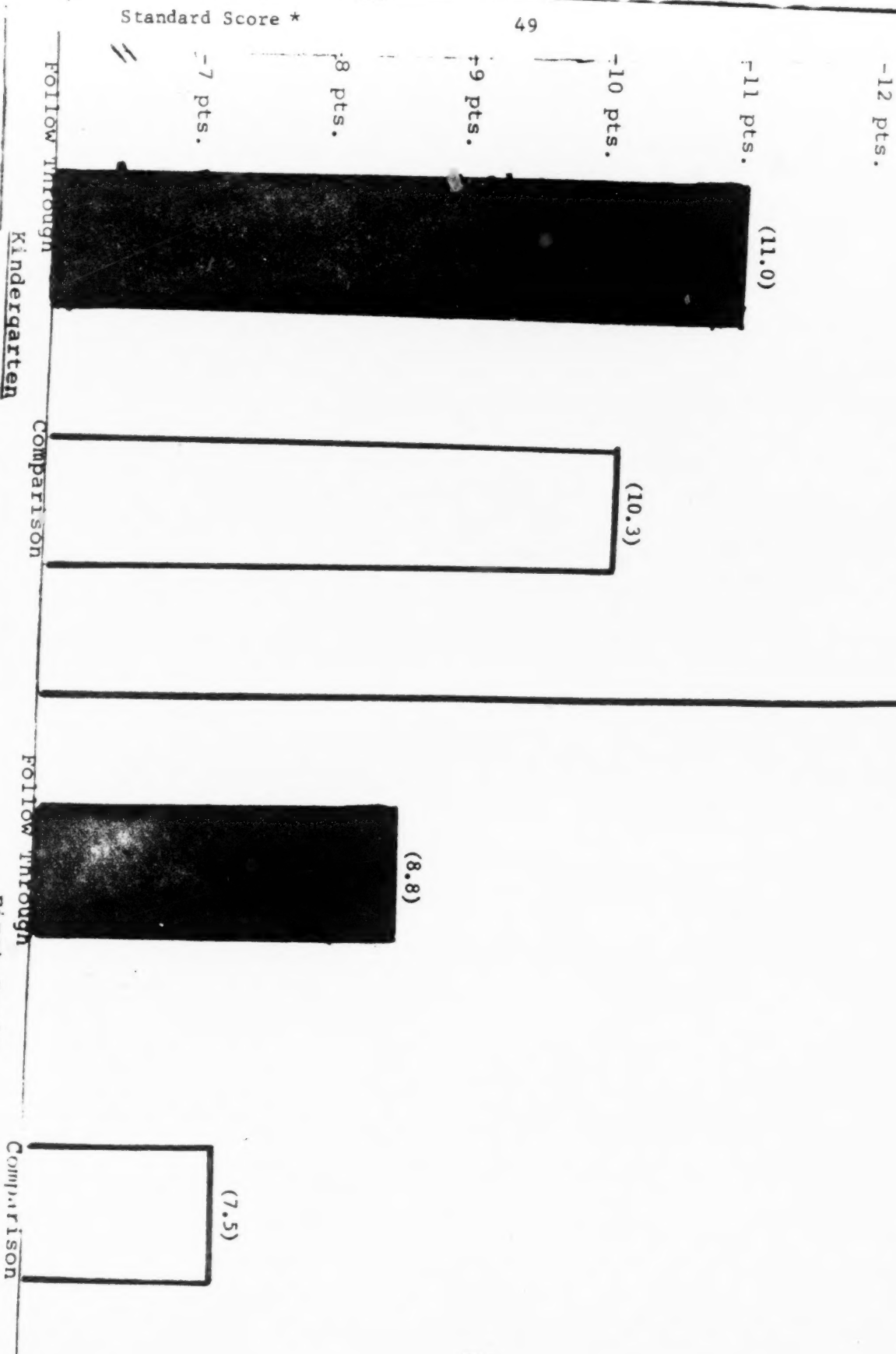
Conclusions concerning the effects of Follow Through approaches, as in the case of Head Start, must be considered highly tentative pending additional program evaluations. Future evaluations will both re-examine patterns of effects found in the first year of evaluation and will collect and analyze data with considerably more precision than was achieved in the first year of evaluation. What the evidence collected during 1969-70 on a sample of 5800 children--in kindergarten in some school districts and first grade in others--does suggest is that Follow Through is accomplishing some of its intended objectives. Although the children in the evaluation are scheduled to participate in Follow Through projects for 2-3 more years (through completion of third grade), the evaluation showed several important patterns after children had participated for 1-2 years in the program.

In both the kindergarten and first grade samples, Follow Through children made significantly larger fall-to-spring gains in achievement test performance than did non-Follow Through children ($p < .005$ for the kindergarten children and $p < .002$ for the first grade children). These gains are illustrated in Figure Five.

When the sample was broken down into sub-groups, it was found that particularly large achievement gains among Follow Through participants (relative to non-participants) in both kindergarten and first grade were

Figure Five

AVERAGE FALL-TO-SPRING GAINS ON ACHIEVEMENT TESTS FOR FOLLOW THROUGH AND COMPARISON CHILDREN



*The scores in all tables are standardized to a mean of 50 and a standard deviation

made by children whose families were definitely below the OEO poverty line, children who had participated in Head Start, and children receiving the full range of program services. Figure Six illustrates the achievement gains for children from "definite" poverty families.

In general, the findings on the achievement battery suggest that the Follow Through objective of increasing school achievement was realized during the 1969-70 school year. Follow Through children surpassed non-Follow Through children in their rate of growth on school achievement measures at both kindergarten and first grade, and the largest differences between Follow Through and comparison children were found for the especially important sub-group of children from families definitely below the OEO poverty line.

The achievement gains of children were also examined separately for the five sponsor groupings. In both the kindergarten and first grade samples, Follow Through children in the Structured Academic approaches made particularly large gains. The differences between their achievement gains and those of comparison children were statistically significant at each grade level. Figures Seven A and B present achievement gains by sponsor groups. Two limitations which must be kept in mind when interpreting sponsor group comparisons are: 1) the fall scores of children participating in the various approaches differed, such that "error effects" might have artificially inflated gain scores in some approaches more than in others and 2) the various programs had been operating in school districts for different periods of time in the Fall of 1969, a factor which should be reduced in importance in future years. Despite these limitations, the pattern of relatively large

Figure Six
 AVERAGE FALL-TO-SPRING GAINS ON ACHIEVEMENT TESTS FOR FOLLOW THROUGH AND COMPARISON CHILDREN FROM
 "DEFINITE" POVERTY FAMILIES

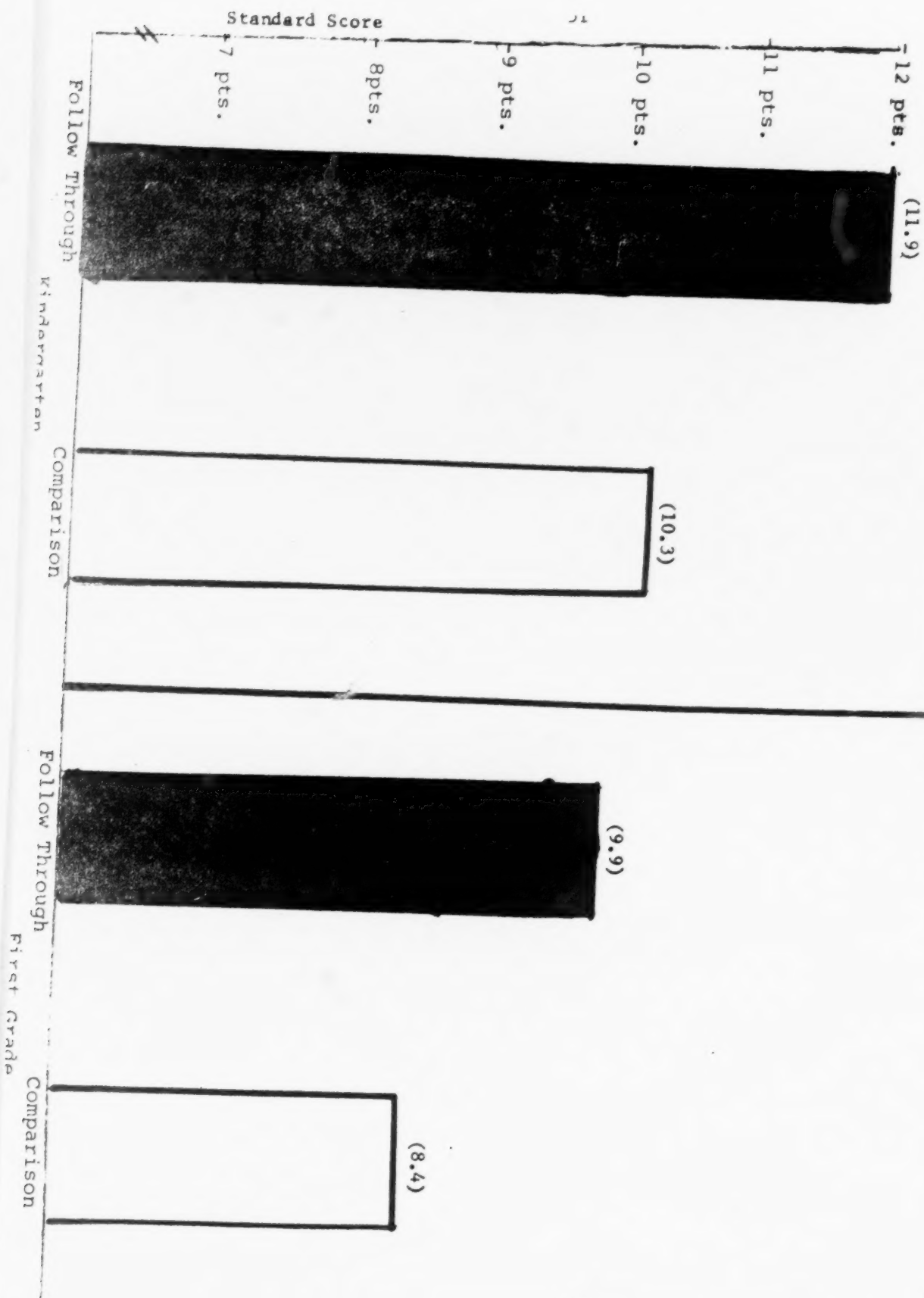


Figure Seven-A
 AVERAGE FALL-TO-SPRING GAINS ON ACHIEVEMENT TESTS FOR FOLLOW THROUGH AND COMPARISON CHILDREN BY SPONSOR GROUPING (KINDERGARTEN SAMPLE)

FT=Follow Through
 C=Comparison

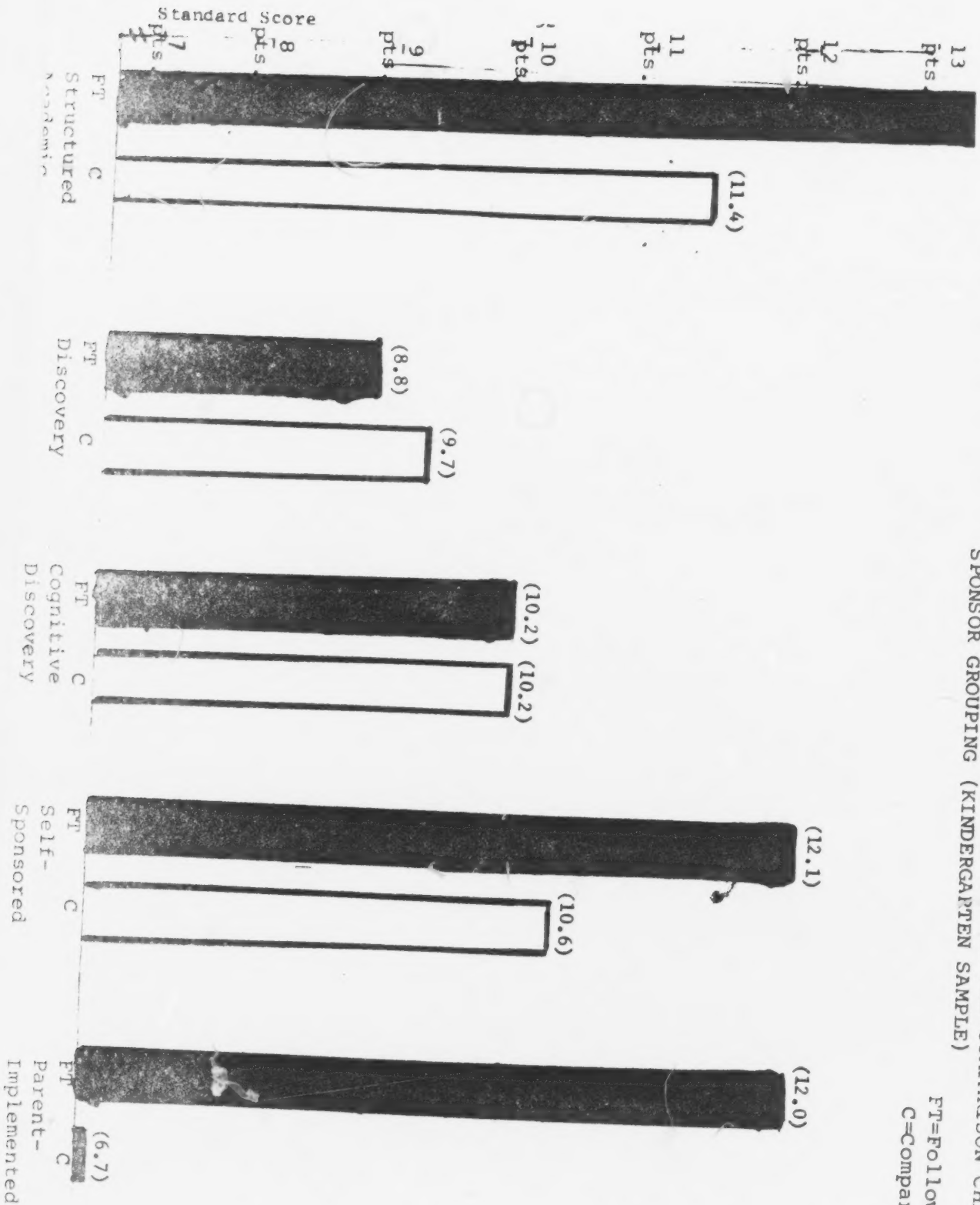
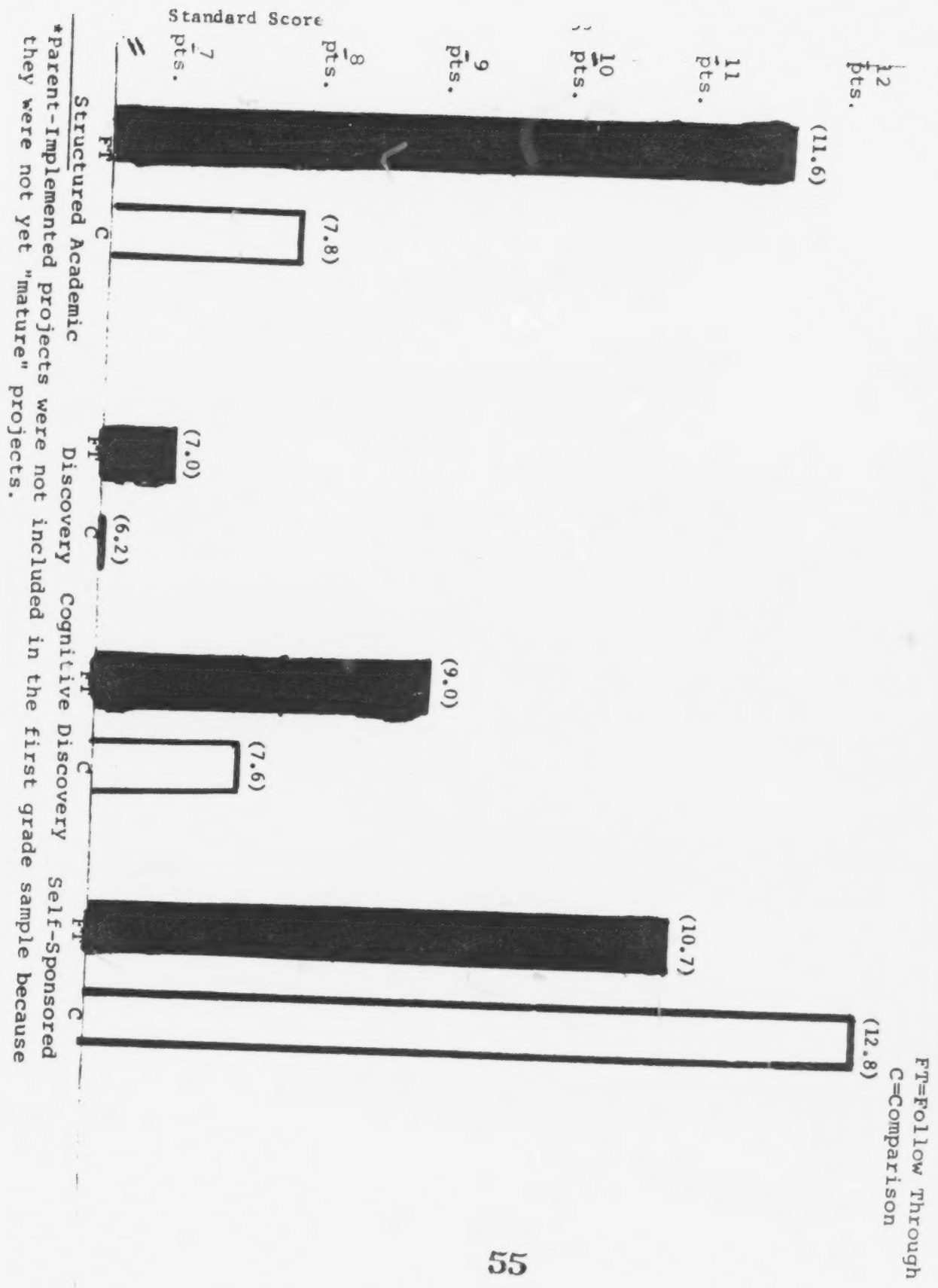


Figure Seven-B
 AVERAGE FALL-TO-SPRING GAINS ON ACHIEVEMENT TESTS FOR FOLLOW THROUGH AND COMPARISON CHILDREN BY SPONSOR GROUPING (FIRST GRADE SAMPLE) *



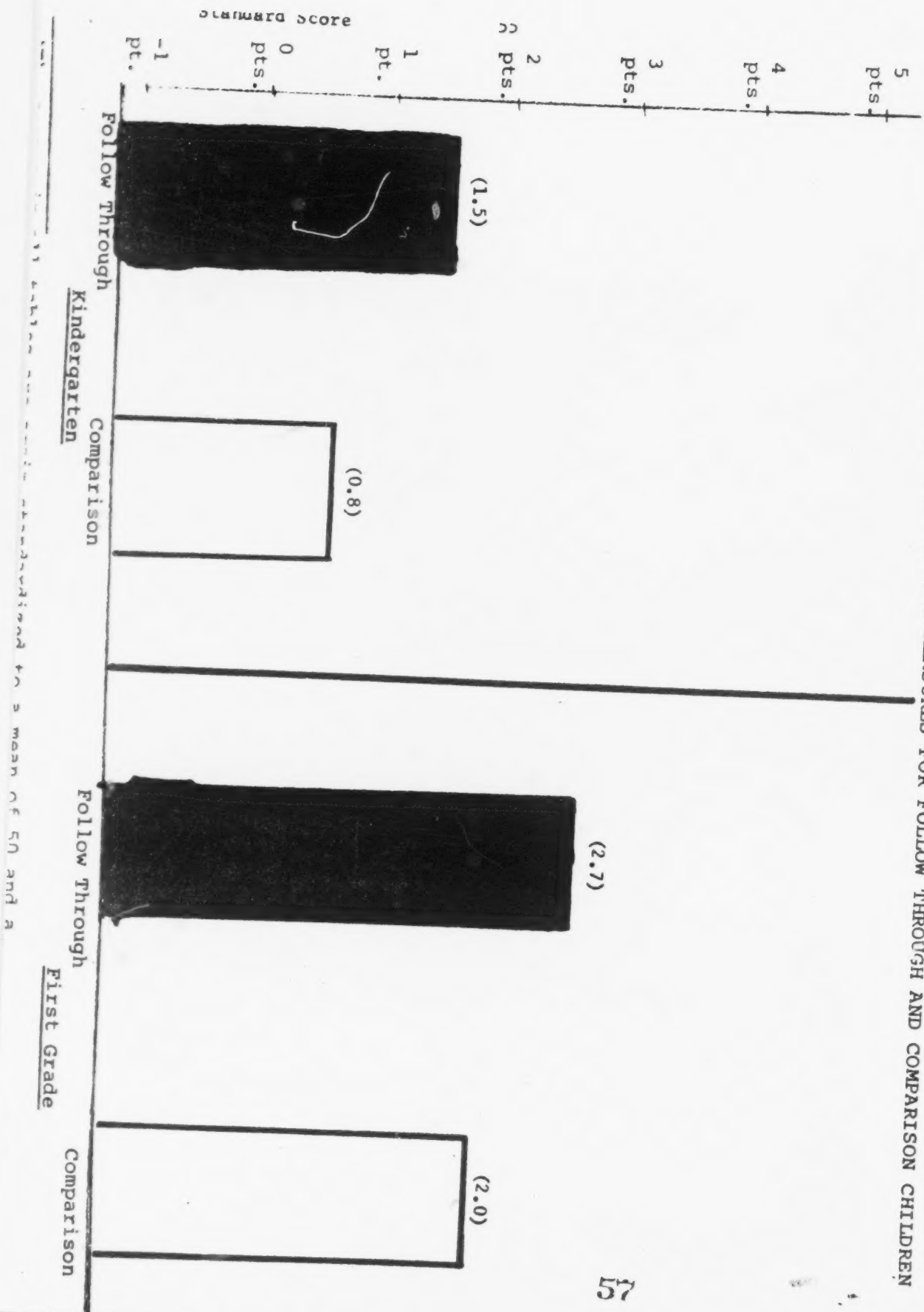
achievement gains made by children in the Structured Academic approaches in both kindergarten and first grade is noteworthy since it suggests a match between the orientation of programs and the outcomes they produce.

Like the achievement battery, measures of children's attitudes towards school and learning showed changes favoring Follow Through children in both the kindergarten and first grade samples. The differences approached statistical significance at both grade levels. The largest shifts in attitudes towards school and learning were made by Follow Through children whose families were definitely below the OEO poverty line. Children in this category showed increments greater than those of comparison children at both grade levels, and the difference was statistically significant among first-graders. Examination of effects by sponsor groupings showed that differences favoring Follow Through children at both kindergarten and first grade occurred only in Discovery and Cognitive Discovery classes. Figures Eight A through D illustrate these attitudinal data. They provide another suggestion of a match between program orientation and impact. In this case, approaches in which children's affective and motivational growth are considered to be of critical importance appear to be more successful than other approaches in consistently promoting development in these areas.

A striking pattern of interrelationships emerged in the data concerning effects on achievement and on attitudes towards school and learning. In the Discovery and Cognitive Discovery approaches, there was a statistically significant association between gains in achievement and positive shifts in attitudes towards school. In contrast, achievement gains and attitudinal changes appeared to be independent of one another in the Structured Academic

AVERAGE FALL-TO-SPRING GAINS ON ATTITUDINAL MEASURES FOR FOLLOW THROUGH AND COMPARISON CHILDREN

Figure Eight-A



AVERAGE FALL-TO-SPRING GAINS ON ATTITUDINAL MEASURES FOR FOLLOW THROUGH AND COMPARISON CHILDREN FROM
 "DEFINITE" POVERTY FAMILIES
 Figure Eight-B

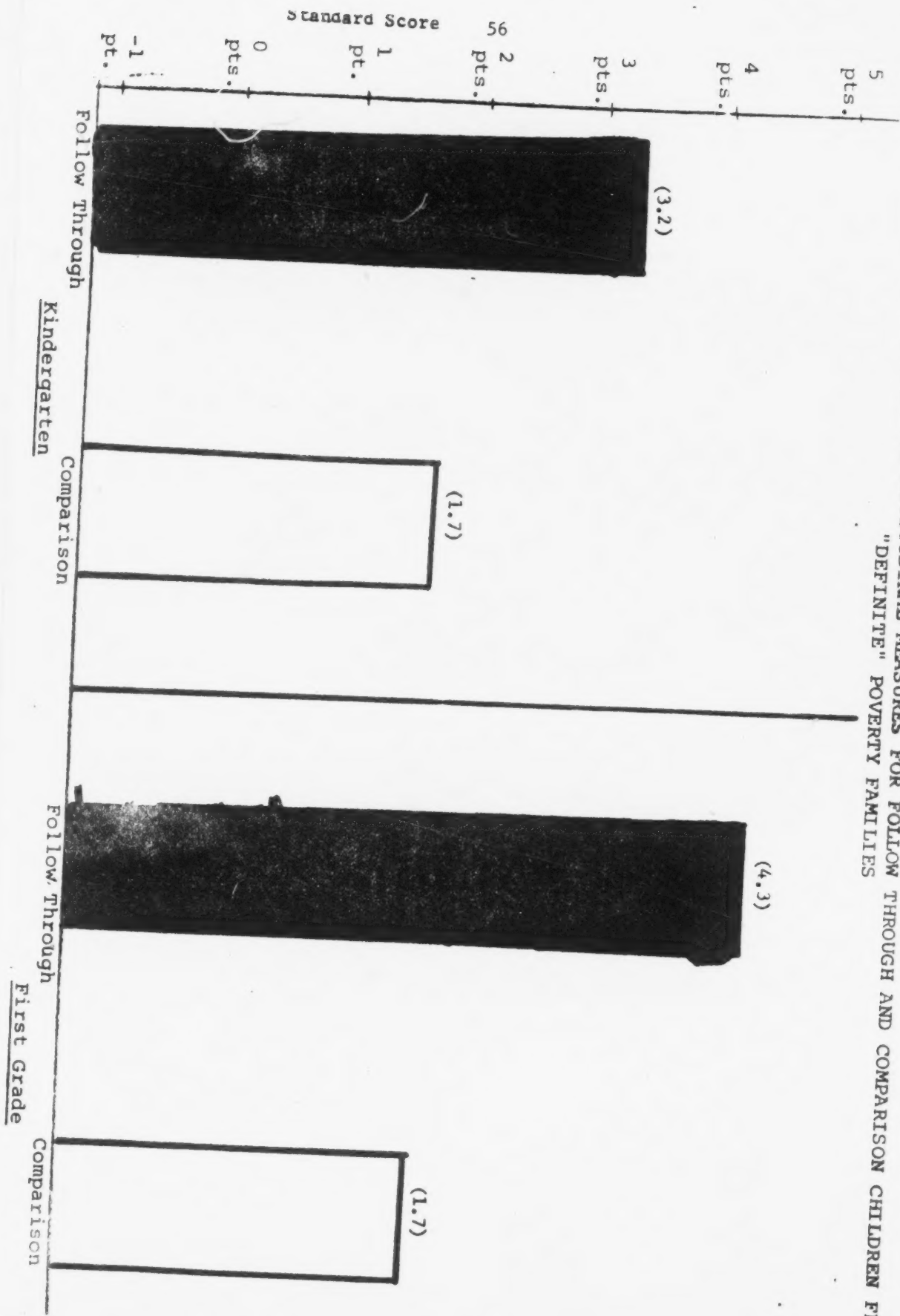
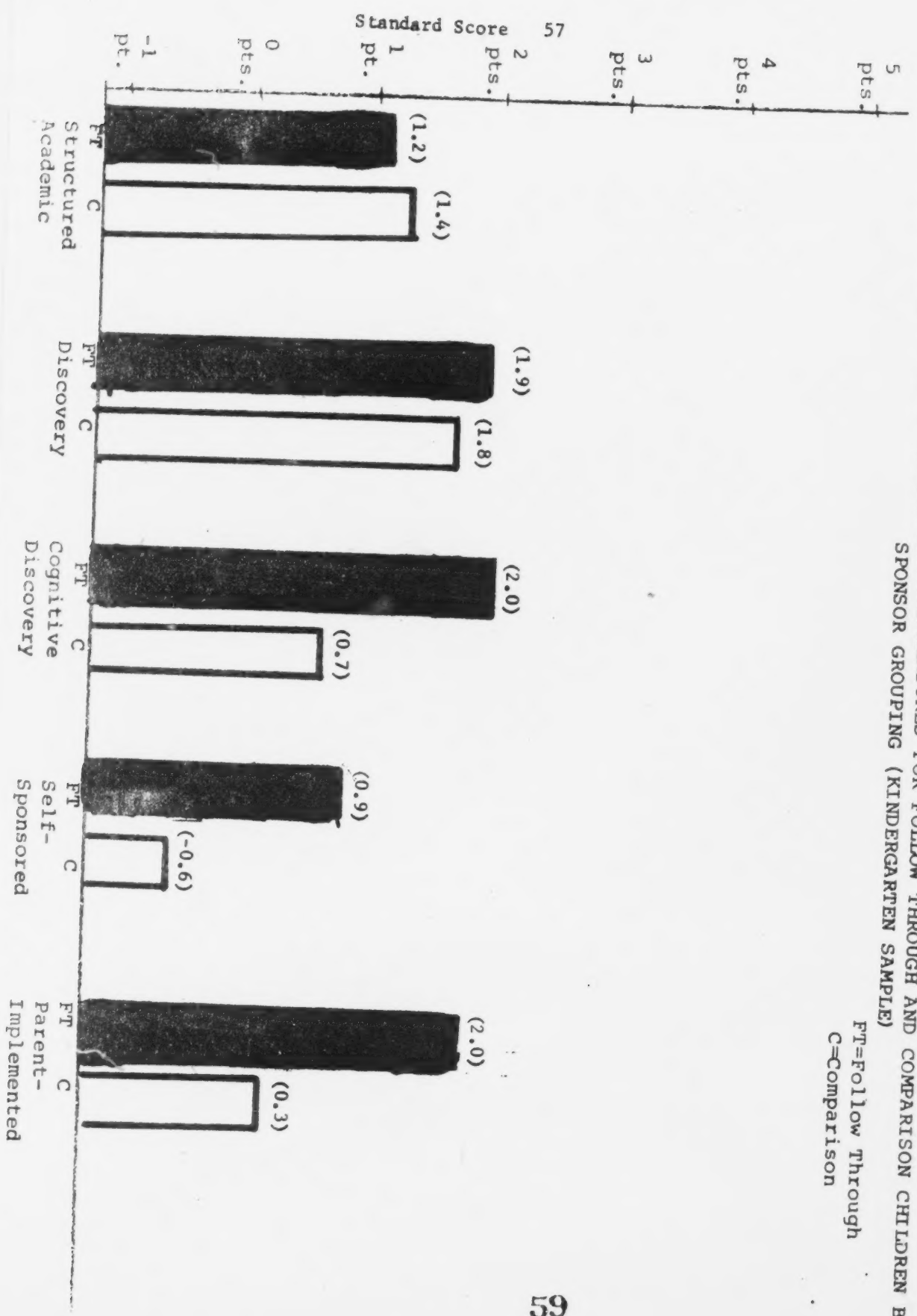
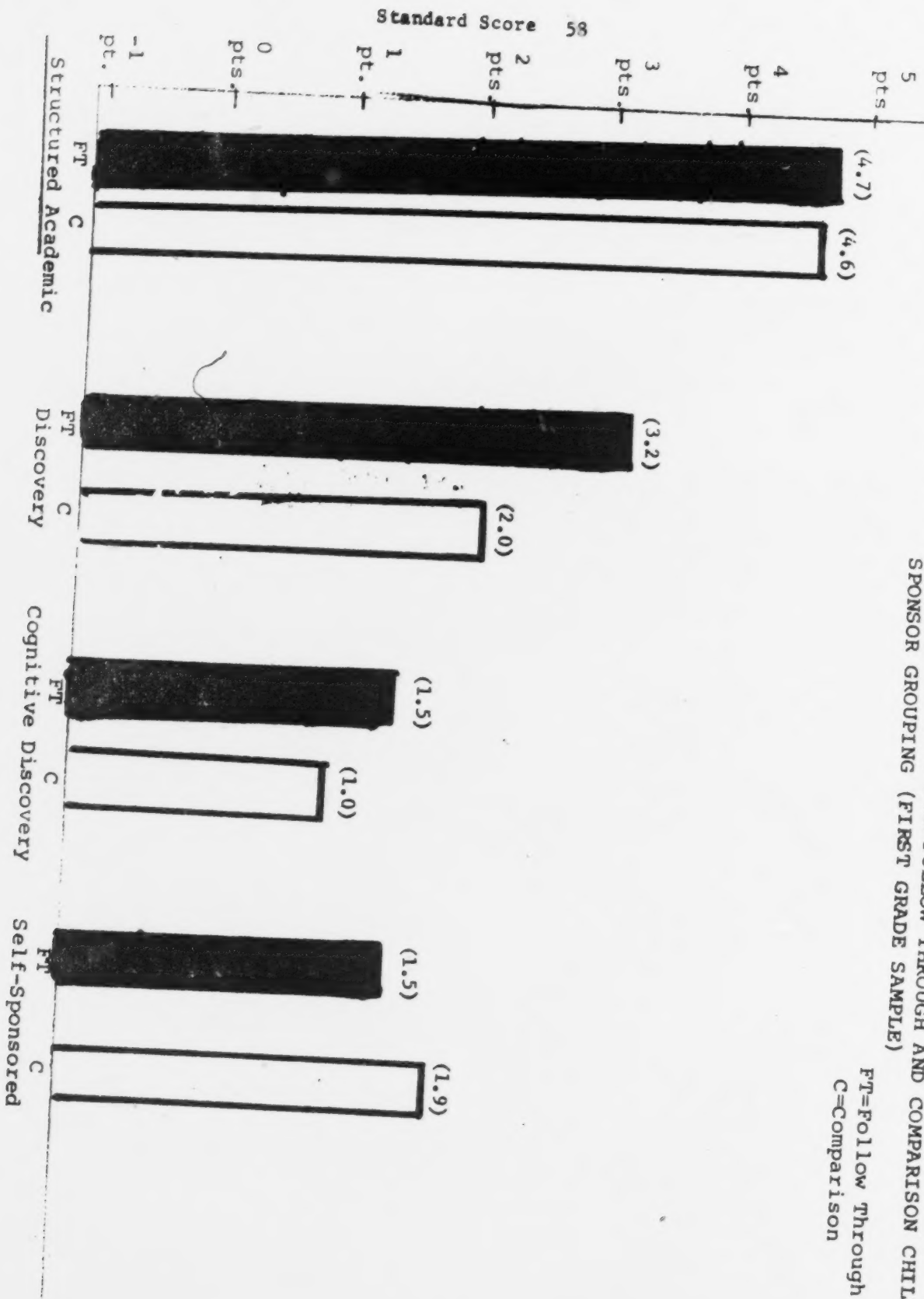


Figure Eight-C
 AVERAGE FALL-TO-SPRING GAINS ON ATTITUDINAL MEASURES FOR FOLLOW THROUGH AND COMPARISON CHILDREN BY SPONSOR GROUPING (KINDERGARTEN SAMPLE)



FT=Follow Through
 C=Comparison

AVERAGE FALL-TO-SPRING GAINS ON ATTITUDINAL MEASURES FOR FOLLOW THROUGH AND COMPARISON CHILDREN BY SPONSOR GROUPING (FIRST GRADE SAMPLE)



approaches. These different relationships, presented in Table Five, are especially noteworthy in the context of the educational philosophies which underly the different approaches. The Discovery and Cognitive Discovery approaches typically view the child's ego development as a complex of inseparable components--problem solving skills, a positive self-image, positive attitudes towards learning, expectation of success, independence, initiative, critical thinking, and the ability to get along with others--in which cognitive development and academic achievement are inextricably tied to other processes. In contrast, the Structured Academic approaches typically define behavioral objectives which address specific skills and are to be achieved through sequenced and highly focussed steps that intentionally separate processes into discrete components. On the basis of these differences, one would predict that relatively strong interrelationships would emerge between changes in achievement and attitudes in the Discovery and Cognitive Discovery approaches and relatively weak interrelationships would emerge in the Structured Academic approaches. Precisely these differential relationships did appear in the data--another suggestion of a match between program orientation and impact.

Measures of children's interpersonal feelings towards teachers and other children, unlike the achievement and attitude measures, did not show consistent patterns of growth favoring Follow Through children and did not appear to differentiate among the various Follow Through approaches.

In summary, children in Follow Through showed greater gains in school achievement during the 1969-70 school year than did their non-Follow Through counterparts, and the differences were statistically significant. This was true for the entire sample, with the largest differences among Follow

Table Five
 INTERRELATIONSHIPS BETWEEN GAINS ON ACHIEVEMENT TESTS AND ON ATTITUDINAL MEASURES FOR FOLLOW
 THROUGH CHILDREN BY SPONSOR GROUPING (KINDERGARTEN AND FIRST GRADE SAMPLES)

<u>Sponsor Grouping</u>	<u>Correlation Between Achievement Test Gains and Attitudinal Measure Gains</u>
Structured Academic	.079
Discovery	.645
Cognitive Discovery	.720
Self-Sponsored	.392
Parent-Implemented	.865*

*The correlation for Parent-Implemented projects is unreliable due to the small sample on which it is based.

Through children whose families were below the OEO poverty line, children who also participated in Head Start, and children who received the full range of Follow Through services. Follow Through participants showed positive changes during the school year in their attitudes towards learning and school, and differences between their growth in this area and that of comparison children approached statistical significances at both grade levels. These data suggest an equality of effects of well-implemented programs. Follow Through children in the sample all participated in "mature" classrooms, and the achievement and attitudinal outcomes in these classrooms were consistently larger than those in non-Follow Through classes. The data also suggest a specificity of program effects in the striking differences among sponsor groupings in patterns of growth in achievement and attitudes. Findings were congruent with the orientations of the different approaches and suggest a match between the outcomes programs produce and the theoretical underpinnings and educational strategies on which they are based.

Parental Attributes

Differences between parents of Follow Through and non-Follow Through children were examined through interviews tapping numerous dimensions of family life and parental awareness of and participation in school activities. In terms of family life--parent-child mutual help, home reinforcement of school-child relationships, and parents' confidence in their control over the majority of external events in their lives--few significant differences emerged between the two groups of parents. With respect to parental awareness of, participation in and feelings of control over school activities, however, consistent differences favoring parents of Follow Through children

were found. Statistically significant differences showed that Follow Through parents were more aware of their children's school programs, more likely to visit school and work in classrooms (for pay or as volunteers), more likely to talk to teachers and other school staff, and more convinced of their ability to influence school programs than parents of non-Follow Through children.

Teacher Attributes

Another area examined in the evaluation was the relationship between participation in Follow Through and teachers' practices and attitudes. In general, teachers, paraprofessional aides and other school staff who were involved in Follow Through viewed the program as very helpful to children, as something they would like to continue participating in, and as a positive influence on both their instructional practices and their feelings about what is possible in working with disadvantaged children. Follow Through teachers differed from non-Follow Through teachers in many ways. They were, for example, more likely to consider such activities as home visits by the teachers and other school personnel as highly important activities for the school to perform. While only half of the non-Follow Through teachers reported home visits at all and the median number of visits among them was less than 1.0, 77% of the Follow Through teachers reported home visits and their median number of visits was 9.0. Similarly, Follow Through teachers were more likely to place a high value on direct parent participation as classroom volunteers and aides than were non-Follow Through teachers. When asked whether they thought parental involvement in classroom activities should increase, remain the same or decrease, Follow Through teachers were

significantly more supportive of increased parental participation than were non-Follow Through teachers. In addition, Follow Through teachers showed markedly greater satisfaction with the progress of their students than did non-Follow Through teachers at the same grade levels.

Descriptions of Follow Through Projects

As part of the description of the processes involved in implementing different Follow Through approaches, sponsors were asked to rate a number of their classes and teachers according to the congruence between classroom activities and the specifications of the approach. Sponsors who made such ratings judged the majority of their projects included in the evaluation to be high in implementation status. This was a valuable piece of information both because it suggests the validity of the evaluation and because it suggests that it is possible to achieve successful implementation within the relatively short period of two or three years.

Corroborative evidence on implementation came from systematic classroom observations in a subset of projects representing Structured Academic, Discovery and Cognitive Discovery Approaches that were also in the Head Start Planned Variation experiment. These observations showed that most adult-child communication in Follow Through classes focussed on the individual child or a small group of children, a finding which documents success among Follow Through projects in achieving one of their important objectives. Significantly more adult communication was addressed to large groups of children in non-Follow Through than in Follow Through classes. The classroom observations also demonstrated that differences in sponsors' orientations elaborated in their own descriptions are reflected in objective

measures of actual classroom activities. The finding is extremely important because, like similar findings from the Head Start Planned Variation study, these are among the first data demonstrating that early childhood education programs differ widely not only in the rhetoric of program publications but also in the day-to-day experiences they provide for children. The significance of this finding is further enhanced by an additional pattern of results: the kinds of activities found most frequently in classrooms were consistent with the student changes identified.

It was found, for example, that approaches which emphasized academic skills, highly structured learning and frequent reinforcement in their program descriptions--Structured Academic approaches--actually provided large amounts of daily experiences congruent with these emphases, including:

- . frequent directed learning activities in such areas as reading, mathematics and language development
- . large amounts of positive praise and corrective feedback
- . frequent direct requests from teachers to children aimed at eliciting particular responses.

In accordance with their objectives and curriculum content, these programs appeared to produce the greatest gains of any approaches in academic achievement among both kindergarten and first grade children.

In contrast, approaches based on educational philosophies that emphasize the interrelationships between children's exploration, independence, affective development and cognitive growth--the Discovery and Cognitive Discovery approaches--were characterized in classroom observations by relatively frequent:

- . use of table games through which children learned by discovery
- . "active learning" experiences in arts and crafts and science
- . requests from teachers to children which were designed to encourage a wide range of possible responses.

Apparently in congruence with the activities they provided, the Discovery and Cognitive Discovery approaches produced the largest consistent increments in Follow Through children's attitudes towards learning of any programs. In addition, strong associations were found between children's growth in achievement and in attitudes towards school and learning in these approaches.

The variations in classroom experiences provided by the different approaches and the apparent associations between children's experiences and outcomes are noteworthy for several reasons. First, they provide objective information for decision-makers, school administrators, teachers and parents about the variety of educational experiences available to young children and the likely consequences of these experiences for children from poverty families. This information is a first step in the development of a "menu of alternatives" from which communities and parents can choose what best fits the needs of their children. Second, the data suggest that variations in children's experiences in a natural setting might well translate into variations in patterns of development. In Follow Through approaches where children's experiences consisted of large amounts of academic learning activities, large growth appeared to occur in the area of academic achievement. In programs which provided experiences that simultaneously promoted the development of children's intellectual skills, their attitudes and self-concept, growth appeared to occur in attitudes towards learning as well as in achievement, and growth in these two areas appeared to be interrelated.

CONCLUSIONS

The results from the Head Start and Follow Through Planned Variation studies, although highly tentative, appear to provide important milestones in our understanding of the relationships between school experiences and children's growth. Among the major findings of the two studies are the following:

- Participants in Head Start and Follow Through made greater gains in achievement and cognitive development during the school year than did non-participant children.
- Examining academic achievement and cognitive and attitudinal growth suggested an equality of effects of well-implemented educational programs. In the Head Start study, children in model classes consistently performed better than children in "regular" classes (although the differences were small in magnitude). Similarly, the Follow Through evaluation pointed to consistently larger growth among children in Follow Through classes than among children in non-Follow Through comparison classes (although differences were again small in magnitude).
- Differences among Planned Variation approaches in both Head Start and Follow Through suggested a specificity of effects such that programs with specific objectives and well-formulated strategies to achieve these objectives were more effective in achieving these objectives than were other programs. This was the case with respect to effects on both children and parents.
- Systematic observations in Planned Variation classrooms indicated that approaches differed in actual practice in accordance with their published descriptions. In areas of primary importance to different approaches, children's experiences reflected models' stated orientations. Measured student changes consistently reflected the differences among models identified in these observations.

In summary, the first major evaluations of the Head Start and Follow Through Planned Variation Programs provide preliminary information about the

variety of educational experiences available to young children and the likely consequences of these experiences. Future evaluations of the two programs will describe effects of different educational approaches after children have participated in them continuously for several years. These evaluations promise to yield more milestones in our understanding of the relationships between school experiences and children's growth.

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